RD & W 1092

TRANSACTIONS OF THE LINCOLNSHIRE NATURALISTS' UNION

(Lincolnshire and South Humberside)

Vol. XX No. 1 1980

Edited by
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Headquarters: City and County Museum, Lincoln

LINCOLNSHIRE NATURALISTS' UNION

Founded June 12th, 1893

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PRESIDENTIAL ADDRESS

delivered in Lincoln on March 8th 1980

by M.R.D. Seaward,

THE USE OF LICHENS FOR EVALUATING ENVIRONMENTAL CHANGES IN LINCOLNSHIRE, 1879 - 1979

From 1877 to 1879, the famous Yorkshire botanist, Dr F. Arnold Lees[1], had a practice at Market Rasen. During this time he pursued his botanical studies with the same vigour he had earlier shown in Yorkshire. His detailed notebooks[2] and herbarium collections[3] bear testimony to this. His published works relating to Lincolnshire[4] are however few in number. Nevertheless, it is possible to make a fairly reliable appraisal of the Lincolnshire lichen flora at this time from these sources, and to show how that flora differed from that of 1979.

In general, there has been a dramatic decline in species diversity over the intervening 100 years. It is unfortunate that we are unable to determine directly the rate of the decline due to the limited interest in lichenology shown by naturalists in Lincolnshire during this period. However, the contributions of W. Fowler[5], H.F. Parsons[6], E.A. Woodruffe-Peacock[7], H. Fisher[8], Miss S.C. Stow[9] and G.H. Allison[10] kept interest in the subject alive in Lincolnshire, and their notebooks, herbarium material and published reports of the extensive programme of Lincolnshire Naturalists' Union field meetings, especially in the Naturalist, provide a valuable source of information. Further details of the lichenological activities in the county are to be found in the Lichen Flora of Lincolnshire[11].

The decline in the lichen flora can also be indirectly determined by an appraisal of habitat modification in the county brought about by changing agricultural practices (including drainage), urban and inter-urban expansion, industrial development and increasing public pressure on the countryside in pursuit of a wide range of leisure activities. For example, Lees observed the considerable changes in the flora, mainly as a result of drainage, over a period of about 13 years[12].

Although Lees' lists for 1877-79 are not extensive they do show the quality of the lichen flora and it is possible to appreciate the plant communities existing at that time; from this an index for environmental monitoring may be constructed, based on a present-day understanding of a range of communities and their respective environmental regimes. This has proved particularly valuable in the monitoring of atmospheric pollution[13], particularly sulphur dioxide (see below).

Several of the species known to be present in Lees' time have sadly disappeared from the county, as indeed they have over wide areas of England; these include Graphis scripta, Lobaria pulmonaria, Parmelia exasperata, P.perlata, Ramalina calicaris, Solorina saccata and certain Usnea species. The record for Lobaria pulmonaria[14] is particularly interesting, but alas it is unlocalized and there is no supporting herbarium material. There is no reason to doubt this record since it is such an unmistakable species; perhaps its more frequent occurrence elsewhere did not seem worthy of comment. On the other hand, Lees' important discovery of Iceland moss, Cetraria islandica, at Linwood Warren is well documented[15], and is supported by herbarium material. This species still

exists at this site, one of the very few lowland heaths in England where it is still extant; 100 years ago it was to be found on several such heaths and its disappearance highlights the loss of these important habitats from eastern counties. It still flourishes at Linwood Warren, but its status there is being carefully monitored[16].

It must be appreciated that Lees and subsequent workers were at a disadvantage since they lacked the aid of suitable field manuals and reference works, and many taxa were poorly understood. Many of their "species" are now known to be a complex of several taxa, and because of this confusion often arises from an interpretation of early records. For example, all records of Cladonia rangiferina from Lincolnshire should be referred to C.arbuscula, C.impexa (=C.portentosa), C.tenuis (=C.ciliata var.tenuis) and C.rangiformis; C.rangiferina, said to be frequent in Lincolnshire in the nineteenth century, is erroneous, as this species is strictly northern in its distribution and is not to be found in the many English lowland counties from where it was previously recorded. Similarly records of "Parmelia olivacea" should be referred to one of at least three different small brown lobed species of Parmelia. In contrast, several "species" of Usnea and Collema recorded from Lincolnshire are in all probability referrable to a more limited number of taxa, since in the past undue taxonomic importance was attached to inherent morphological variation of these and other genera.

It is therefore not possible to make past and present floral comparisons based on diversity counts, for our taxonomic knowledge over the past 100 years has been revolutionized[17]. In making such comparisons it is necessary to assess the past and present status of a select number of species whose ecological requirements are fully understood. Herbarium material to support records of such species is an essential adjunct to such interpretations (see below).

The major causes for the decline in the Lincolnshire lichen flora over the past 100 years are discussed below:

1. Selective gathering

From medieval times, and even earlier, lichens have been collected by herbalists for medicinal purposes; no doubt specific epiphytic lichens in Lincolnshire have declined as a result of these practices. Furthermore, as a major wool-producing area at this time, considerable quantities of particular lichen species would have been collected for dyeing purposes. In more recent years, over-zealous plant collectors have been responsible for the decline of rarities, which have found their way into herbaria, and commoner species, which have been used for teaching purposes and as basic material for modelling trees by architects and model-railway enthusiasts; fortunately, due to Lincolnshire's isolation from the more traditional botanical hunting grounds and its low population density, particularly in respect of lichenologists, there has been a negligible effect on the lichen flora in these instances.

2. Habitat modification

(a) Trees

The removal of trees by man from the British landscape has continued for several thousand years, and the process has accelerated over the past few centuries. Lincolnshire today is one of the least wooded counties, and the extensive planting of conifers mainly by the Forestry commission, has not compensated for the disappearance of mature deciduous trees which would in low or moderate levels of air pollution (see below) support a diverse epiphytic lichen

flora[18]. Unlike many English counties, Lincolnshire is short of parkland as there are comparatively few stately homes and other major private estates which would have provided such trees. Mature trees have also disappeared at an alarming rate due to the removal of hedgerows, and Lincolnshire has been one of the worst affected counties in this respect. Uncontrolled stubble-burning, chemical spraying and broadcasting of fertilizers[19] may locally affect the lichen flora. The disappearance of elm trees as a result of Dutch elm disease has exacerbated the problem, for this tree provides a particularly suitable habitat for epiphytic lichens.

(b) Heathlands, grasslands and dune-systems

Heathlands and semi-natural grasslands over a variety of sandy and calcareous soils were at one-time widespread throughout Lincolnshire, as can be determined from place names (especially those incorporating the words Warren, Moor and Common). Such sites have continued to disappear since the period of Enclosure in the 17th and 18th centuries[20], and more recently many have been destroyed by the plough (e.g. Waddingham Common), by the bulldozer and excavator for the abstraction of iron ore (e.g. Crosby Warren), sand, gravel, hard-core, etc., and by a change in management; in the latter case the lowering of the water-table, the spread of bracken and birch, the greater incidence of fires, the reduction in rabbits following the outbreak of myxomatosis in 1953, and the replacement of sheep by cattle have all been instrumental in the disappearance of the once-rich terricolous lichen flora of such habitats. Fortunately the few remaining tracts of heathland in Lincolnshire still support varied and often very interesting lichen communities (e.g. Cetraria islandica at Linwood Warren - see above), which have enhanced their status for selection as nature reserves and as sites of special scientific interest (SSSI)[21].

The extensive dune-systems along most of the north Lincolnshire coast, which once supported a rich lichen flora, have also succumbed to changes in management. The most noticeable change has resulted from tourism: mile after mile of coastal development (housing, caravans and recreational facilities) has directly replaced important dune habitats and contributed to significant changes in others through public pressure. Under such conditions few stable dune-systems capable of supporting interesting terricolous lichen communities can survive.

(c) Buildings

Since Lincolnshire possesses few natural rock outcrops, there is a dearth of sites capable of supporting saxicolous lichen communities. However, this is more than compensated for by the county's magnificent architectural heritage, and the various building materials employed at different periods provide a rich hunting ground for the lichenologist.

In general, Lincolnshire buildings are constructed of brick or locally-quarried calcareous materials; the latter support a varied lichen flora, whose colourful mosaic exerts a mellowing influence[22]. Where building materials have been imported into the county, the stonework (mainly siliceous) supports its own characteristic lichen flora, which is particularly noticeable on churches and their associated graveyards. Particularly fine lichen assemblages utilizing a range of calcareous and siliceous substrata are to be encountered in the older churchyards of the Wolds. Church maintenance, or lack of it, is a significant factor in the survival of lichens: repointing and rendering of walls, cleaning of gravestones by scrubbing and use of chemical agents, use of herbicides, and over-growth by grasses and shrubs are but a few of the practices which adversely affect lichens.

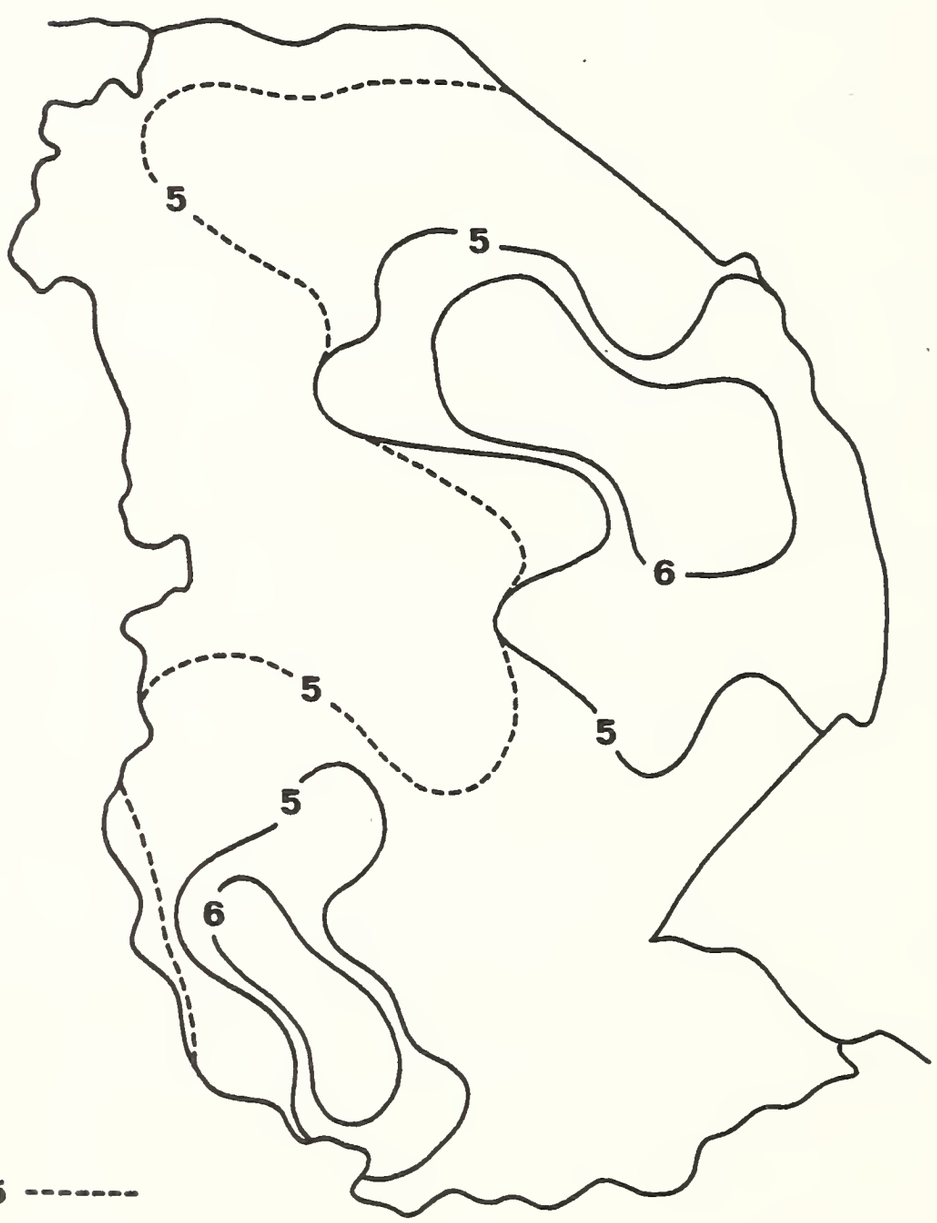
Figure 1. Approximate limits of lichen zones (see Table 1) for Lincolnshire in 1879 and 1979. Areas to the west of zone 5 delimitations are mainly zones 3-4, but zones 0-2 are to be found in and around urban and industrial complexes.

1879

1879

1979

1979



1879 ------- 5 -------

1979 ——— 5 ———

1979 ——— 6 ———

The fashioned wood of fences and of many old houses, barns, etc. provides habitats for lignicolous lichens, especially where the wood has been impregnated with dust-borne fertilizers. In the past, thatched roofs would also have supported a characteristic flora; sadly, nearly all of these have disappeared, and the few that remain have thatchwork which is not conducive to lichen establishment[23].

3. Urbanization and industrialization

The replacement of natural substrata by brick, concrete and tarmacadam, and the pollution of air, soil and water have all been detrimental to lichens. The sensitivity of these plants to such environmental changes is well documented[24]. Lichens are highly susceptible to sulphur dioxide pollution, and the presence/absence of many species, particularly epiphytes, can be used to monitor this pollutant. Not only can present-day monitoring surveys be undertaken, but also, by a careful interpretation of past records (suitably supported by herbarium material), retrospective assessments of ambient atmospheric pollution levels can be made[25].

Such an interpretation has been undertaken for Lincolnshire to determine the difference in pollution levels between 1879 and 1979; the results, based on a modified qualitative scale for the estimation of sulphur dioxide air pollution (see Table 1)[26], are provided cartographically in Figure 1. It will be seen that in 1879 zone 5+ covered c. 5488 km^2 (76.1%) of the county; by 1979 this area had been reduced to c. 2007 km^2 (27.8%). Applying this 63.4% reduction in area, it may be computed that zone 6+ declined from c. 1897 km^2 (26.3%) to c. 694 km^2 (9.6%) in the same period of time. The pollution load on the Lincolnshire atmosphere can be gauged from these data (see Table 1). It is also clear from published records and herbarium sources that a mean winter sulphur dioxide level of c. 30 $\mu g/m^3$ almost certainly occurred in limited areas of north and south Lincolnshire in 1879, whereas in 1979 a level of c. 50 $\mu g/m^3$ (and c. 40 $\mu g/m^3$ at one or two sites only) was to be found in such areas. In general, the pollution load for rural Lincolnshire in 1979 is in the range of 60 - 100 $\mu g/m^3$, and figures in excess of this are commonly to be found in and around urban and/or industrial complexes.

Although the onset of major air pollution can be linked with the beginning of the Industrial Revolution nearly two centuries ago, pollution levels remained high over relatively small areas (c. 4% of England) for much of this time. The implementation of the Clean Air Acts (1956 and 1968) has brought about dramatic reductions in sulphur dioxide levels in and around urban and industrial areas, but there has been a noticeable increase in many rural areas due to blanket pollution (cf. Figure 1).

However, today, urban areas appear to be less inhospitable to lichen establishment, and certain lichens have responded to reductions in pollution levels: the colourful mosaic of lichen thalli colonizing calcareous substrata is now becoming as familiar a sight in Lincolnshire towns as it has always been in the countryside. Similarly, reductions in pollution levels have been observed in rural Lincolnshire in recent years, but the re-establishment there of epiphytic lichens, e.g. Ramalina and Usnea spp., has been temporary and less dramatic[27]. The progress of amelioration in Lincolnshire is being monitored periodically by lichen surveys.

The Lincolnshire lichen flora can be summarized as follows[28]: 228 taxa have been reported from the county, of which two have proved to be erroneous and seven are doubtful in the absence of supporting herbarium material. of the remaining taxa, 210 have been recorded during the past twenty years and eleven

Table 1. Qualitative scale for the estimation of sulphur dioxide air pollution in Lincolnshire using epiphytic lichens on non-hypertrophicated bark

Zone	Flora	No. of spp.[(a)]	SO_2[(b)]
0	Epiphytes absent	0	240
1	*Pleurococcus viridis* s.l. present but confined to the base	0	170
2	*Pleurococcus viridis* s.l. extends up the trunk; *Lecanora conizaeoides* present but confined to the base	1	150
3	*Lecanora conizaeoides* extends up the trunk; *Lepraria incana* becomes frequent on the base	2	125
4	*Hypogymnia physodes* and/or *Parmelia sulcata* appear on the base but do not extend up the trunk; *Lecidea scalaris*, *Lecanora expallens* and *Chaenotheca ferruginea* occasionally present	6	70
5	*Hypogymnia physodes* extends up the trunk; *Parmelia glabratula*, *P.subrudecta*, *Parmeliopsis ambigua* and *Lecanora chlarotera* appear; *Calicium viride*, *Lepraria candelaris* and *Pertusaria amara* may occur; *Ramalina farinacea* and *Evernia prunastri* if present largely confined to the base	15	60
6	*Parmelia caperata* present at least on the base; rich in species of *Pertusaria* and *Parmelia*	30	50
7	*Parmelia caperata*, *P.revoluta* and *P.tiliacea* extend up the trunk; small thalli of Usnea sp(p). may occur	40	40

(a) Approximate number of corticolous lichen species on a variety of deciduous tree species at the same site

(b) Approximate mean winter sulphur dioxide level ($\mu g/m^3$)

have not been seen for at least sixty-five years (of which five are almost certainly extinct). The 8% decline (i.e. 18/226) oversimplifies and understates the true position[29]. When considering these data one should be aware of the limitations of both past and present recording, e.g. the difficulties in taxonomic interpretation and the extensive area (*c*. 7210 km^2) to be covered.

It is to be hoped that a new generation of enthusiastic lichen recorders can use this work as a baseline for monitoring future changes in our environment.

Notes

1 Dr F.A. Lees, 1847-1913, Leeds; see foreword and bibliography (pp. iv-xi) by Seaward, M.R.D. to facsimile edition (1978) of Lees' 1888 The Flora of West Yorkshire, Wakefield.

2 Those relating mainly to Lincolnshire are now in the possession of Dr W.A. Sledge, Leeds.

3 Now housed in Cartwright Memorial Hall, Bradford (CMM), City and County Museum, Lincoln (LCN), and British Museum (Natural History), London (BM).

4 Botany and outline flora of Lincolnshire, in White, W., ed.(1892) History, Gazetteer and Directory of the County of Lincolnshire, Sheffield, pp. 37-63; and several papers in Bot.Loc.Record Club Rep. and Naturalist, Hull.

5 Rev. W. Fowler, 1835-1912, Winterton.

6 Dr H.F. Parsons, 1846-1913, Goole.

7 Rev. E.A. Woodruffe-Peacock, 1858-1922, Cadney; see Seaward, M.R.D., 1971, Lincs. Hist. & Archaeol. 6: 113-124.

8 H. Fisher, 1860-1935, Newark.

9 Miss S.C. Stow, ?1870-1956, Caythorpe.

10 G.H. Allison, 1862-1956, Grimsby.

11 Seaward, M.R.D. (1980) Lichen Flora of Lincolnshire, Lincs.Nat.Hist. Brochure No.8, Lincs. Nat. Union, Lincoln.

12 Naturalist, Hull 1900: 229-236.

13 See Ferry, B.W., Badderley, M.S. and Hawksworth, D.L., eds. (1973) Air Pollution and Lichens, London; and Hawksworth, D.L. and Rose, F. (1976) Lichens as Pollution Monitors, London.

14 See Hawksworth, D.L. and Rose, F., op.cit., fig. 6-1(b).

15 Lees, F.A., 1878, Naturalist, Hull 3: 97-102.

16 Seaward, M.R.D., 1978, Lichenologist 10: 111-122.

17 Cf. 1980 check-list of British lichens (Lichenologist 12: 1-115) which accepts 1471 taxa.

18 See Rose, F. in Brown, D.H., Hawksworth, D.L. and Bailey, R.H., eds. (1976) Lichenology: Progress and Problems, London, pp. 279-307.

19 Hypertrophication (eutrophication); see Gilbert, O.L., 1976, Lichenologist 8: 173-178.

20 Seaward, M.R.D., 1973, J. Scunthorpe Mus. Soc., ser.2, 2: 1-28.

21 See Ratcliffe, D.A., ed. (1977) A Nature Conservation Review. Cambridge.

22 Seaward, M.R.D., 1979 Urban Ecology 4: 217-225.

23 See Brightman, F.H. and Seaward, M.R.D. in Seaward, M.R.D., ed. (1977) Lichen Ecology, London, pp. 253-293.

24 See note 13 above; also series 'Literature on air pollution and lichens' in Lichenologist (1974 onwards).

25 Cf. Hawksworth, D.L., Rose, F. and Coppins, B.J. in Ferry, B.W. et al., op.cit., pp. 330-367.

26 Cf. Hawksworth, D.L. and Rose, F., 1970, Nature, Lond. 227: 145-148.

27 Seaward, M.R.D., 1979, Lichens as indicators of ameliorating environments. Halle, DDR.

28 See Lichen Flora of Lincolnshire (note 11 above), with addition of two new county records for Lecania baeomma and Usnea inflata, and recent record for Peltigera praetextata.

29 Cf. 47% decline for neighbouring Leicestershire and Rutland, in Hawksworth, D.L., 1975, Trans. Leicester Lit. Phil. Soc. 68: 32-56.

HON. GENERAL SECRETARY'S REPORT

The Union has not been idle during 1979. Six indoor meetings, twenty field meetings and a very successful full day's Photographic Symposium have all attracted comfortable attendances despite the increased costs of transport. The Executive Committee has met nine times during the year, usually with an over-long agenda on which finance has figured in one form or another. A Special General Meeting was held on 29 September in order to raise subscription rates, but we shall of course have to await the Hon. Treasurer's report at the end of 1980 to see the full effect of this. The increasing difficulty people have in keeping up subscriptions to a number of organisations is of great concern to the Executive Committee, but inflation is a fact of life to which no one can turn a blind eye.

The Executive Committee has scrutinised the Constitution of the Union in an attempt to ease the administrative side of its work, and the results of that effort are before you today.

An important part of the reason for the existence of the Union lies in its life as a publishing body of long standing. Thanks to the able editorship of Mrs A.L. Goodall Transactions Vol.XIX No. 3 was published in July and the next number is in the pipe line. It is a source of great regret that it has not been possible to have Dr Seaward's Lichen Flora on the table here today at the end of his Presidential year, but it is still "on the way". The Flora and the Geology of Lincolnshire are both now showing profit on the sales account and 250 copies of the Flora were finally received from the printers - at no cost to the Union - in replacement of the lost copies which have caused so much waste of time to so many searchers besides my long-suffering predecessor Mr Rowe.

During the early part of the year the Union benefitted financially from the sales tables run by Mrs B.J. Owen and Mrs J.D.W. Owen. I should like to record our thanks to them and our regret that they have been unable to continue to the end of the year. The Executive Committee would welcome an offer of help from any member who could assist at indoor meetings.

The Union has sent two representatives to meetings called to set up a Wash Study Group: a co-ordinating body designed to bring together all those organisations which have an interest in the study of the Wash. Although the Group will not itself undertake research it expects to identify gaps in our knowledge of the Wash, to suggest projects to appropriate organisations to fill the gaps and to maintain a bibliography of research done.

Looking to the future, it is clear that the Union cannot stand still. It has a function to carry out in recording and disseminating knowledge of the natural history of the county, and to do this it needs the co-operation of all its members and indeed of a wider membership than it has today. (Have YOU been putting your records on paper and sending in to the secretaries?) The appointment of a Publicity Secretary has proved well worth while in bringing the Union to the notice of a public largely unaware of its existence, and Mrs Pennell is to be congratulated on her energetic opening-up of lines of communication.

In conclusion, thanks are no less due to all the officers, both general and sectional, and to the members of the Executive Committee for a great deal of hard work during the year and for their forbearance in respect of the inexperience of the Hon. General Secretary.

Norah Goom

FIELD SECRETARIES' REPORT

Ten general field meetings were held in 1979, over as wide a geographical range as possible, so that most members had some meetings within easy reach of their home. A variety of habitats was chosen in the hope of catering for most people's interests. The hard winter of 1978/79 was very long with snow falling as late as May 1st. Spring flowers were very late.

The first general field meeting in April started with the continuation of the Small Streams Survey, held this year at Edenham and Ingoldsby and organised by Mr P.J. Wilson. The weather was kind to us at this event.

The President's meeting on 26th May, at Twigmoor Woods, was unfortunately washed out. We saw Teesdalia in flower, also Marsh and Heath Violet. After two hours soaking, members retreated to the shelter of Scunthorpe Museum where the displays in the refurbished countryside gallery were much admired. Members later appreciated the delicious tea provided at the home of Mr F. Brasier.

Miss E.J. Gibbons' Botanical Section meeting on May 30th at Kirkby Moor also suffered an occasional downpour. Many interesting plants were seen both at Kirkby Moor and Moor Farm, which we later visited with Mr A. Hodson, the Reserve Manager.

The meeting at Snipe Dales on June 2nd related to the survey being undertaken by the Ornithological Section. Giant Horsetail and Meadow Saxifrage were among the plants to be seen. Mr Roger Wardle, who led the meeting, pointed out many interesting features, including badger sets both on and outside the reserve, and a swallow's nest in the pump house.

Later this same month we met at Irby Dales wood, where in a small quarry we found the eggs of Orange-tip butterfly on Sweet Rocket, and some unusual plants. There was a colony of sand martins nesting in the sandstone - 15 nests in all. Greater spotted and green woodpeckers and treecreeper were among other birds to be seen. A successful moth meeting followed later in the evening.

On July 29th, 24 members were joined by 5 members of the Rutland Natural History Society at Holywell, Stamford, for a meeting led jointly by Mrs Jane Ostler and Mrs Stapleton. The morning had been blessed with torrential rain, but luckily, although one or two heavy showers persisted into the afternoon, we managed to keep dry. The canopy in the nearby forestry plantation had grown over, but a fair number of birds were seen including a bean goose on one of the lakes (perhaps on holiday from Peakirk!). There was a good diversity of limestone flowers, but lepidoptera were scarce. To compensate, Mr Peter Wilson found an Oak Bush-cricket!

On August 18th, 25 members were led by Mr Nicholas Watts from Gedney Drove End over the Dawesmere bombing range, where in spite of a poor tide, a good diversity of migrating birds were seen. After torrential rain the previous day and a cloudy morning, the sun came out and we were blessed with a beautiful warm afternoon, followed by an enormous tea at the 'Jolly Crispin' at Lutton.

Our September meeting on the first of the month was held at Burton upon Stather, where the steep escarpment descends to the Trent. This is a well worked area which is gradually deteriorating for plants owing to the hawthorn scrub and coarse grasses colonising the slopes. A spring visit may be rewarding.

Our final meeting was the Fungus Foray held at Roxton Woods on October 20th and led by Mr J. Houghton. On this occasion we hired the Institute at Keelby to serve refreshments and hold the de-briefing session. We were sorry that Miss Waterhouse was unable to join us on this occasion.

We wish to express our appreciation to farmers, landowners and the L & SHTNC for help and co-operation in arranging the field meetings.

The winter programme followed the conventional pattern. We were very fortunate in having two excellent visiting lecturers, Dr Bernard Stonehouse who gave an illustrated talk on 'Antarctic Biology' and Dr Franklyn Perring whose subject was 'Our Vanishing Wild Flowers'. Both these speakers provided stimulating material covering ground which was quite new to many members.

Mary Giles
Violet Wilkin

OBITUARY

Dr S.H. Robinson of Lincoln died early in 1980. He joined the LNU in 1930 and had thus been a member for 50 years. His great hobby was microscopy, and as a Fellow of the Royal Microscopical Society he soon influenced the membership to take a serious interest in his own special studies. This led in 1931 to the formation of the Microscopy Section, of which Sydney Robinson was secretary and became its President in 1946. The following year he was elected President of the LNU and his Presidential Address entitled "A short history of the microscope: with special reference to the microscopes of Messrs. Powell and Lealand, London" revealed another of his great interests. He had studied the instrument as well as its application to scientific work, and in his home he had a magnificent collection of microscopes. He was the recognised authority on the instruments of Powell and Lealand.

In 1949 he was awarded a doctorate degree in recognition of his work on the study and classification of diatoms. So many members of the LNU were deeply grateful to Dr Robinson for his advice in introducing them to the microscope, and the time he took to instruct and interest junior members was a valuable contribution to education and research. In spite of much indifferent health he led a full life and had many correspondents in microscopy throughout the world.

F. T. Baker

SECTION OFFICERS' REPORTS

BOTANY

E. J. Gibbons

Not a very prolific year and the weather was not encouraging, but much useful work was done.

Twigmoor woods and heath A very good locality but after two hours of heavy rain we retired to Scunthorpe Museum which was warm and dry. Dr Mark Seaward told us how the habitat had changed since the 1960s; the bracken and birch had encroached into the heath and the marsh was not so wet. We found Marsh Violet, Heath Milkwort, Shepherd's Cress and Early and Changing Forgetmenots.

Kirkby Moor Reserve Here the cold spring had prevented the usual flush of early plants and not much was flowering except Climbing Corydalis in the wood. Mr Clipson gave a very interesting account of wartime activity in the area. Cottongrass was much in evidence, and Alder Buckthorn and Milkwort were in flower. At Moor Farm it was more sheltered and the small heath plants were pretty; Birdsfoot Vetch, Shepherd's Cress, Spring Vetch and Storksbill were found.

Snipe Dales This interesting valley has been well worked before. Meadow Saxifrage and the two Golden Saxifrages grow here, with Marsh Marigolds, Ragged Robin, Water Avens, Heath Bedstraw, Crosswort and the Great Horsetail. 102 plants were noted.

Irby Dales Wood and Swallow Wold Not much was flowering in the wood, but two tall trees of Small-leaved Lime and some Red Campion were seen.

Swallow Wold has been planted with conifers. It is chiefly notable for the soil of pulverised Red Chalk which has a very poor variety of plants; some Bugle and Sheep Sorrel were growing in the ride. A large chalk pit had been used as a tip and had a nice show of Dame's Violet and Great Celandine with double flowers.

Great Scrubbs Wood and meadow This has been a typical Lime wood of the area with a fine woodland flora, much of which remains, including Wild Service tree, Sneezewort, Dyer's Greenweed and several kinds of St. John's wort. The meadow is a fine remnant of old pasture and is being cared for to preserve the Green-winged Orchis and other meadow plants.

Gedney Dyke There are some Fleets or former inlets of the Wash which still have some interesting plants, but drainage and cultivation leave very few habitats for anything but maritime plants. It is odd that it is the first time that Marram grass has been recorded here but sand is what it likes. Sea Lavender, Scurvy-grass and Wild Carrot were recorded.

Burton Cliffs A good variety of habitats was explored; the Trent bank with some maritime plants, some woodland, scrub, grassland and arable on various soils varying from sea level to 200 ft. Sea Milkwort, Bucks'horn Plantain and Red Goosefoot were found on the shore, Red Campion and Enchanter's Nightshade in the wood, Common St. John's wort and Barren Strawberry on the hillside.

Roxton Wood The fungus foray was an opportunity to find many ferns, notably Hartstongue, Hard Shield-fern, Lady Fern, Golden scale Male fern; also Small-leaved Lime, Maple, Yew, Holly and Hemp Agrimony, plus a rare Downy Rose in fruit.

Further surveys of woods around Wragby have been done by Mrs Weston and Mr Peter Weston, showing a variety between them. Some have no Wood Forgetmenots, others no Archangel, etc. Many have Climbing Fumitory, which does not grow north of Market Rasen.

Since the 1978 report many records have come in from the Job Creation Group at Alford. Their survey covered most of the county but it takes a long time checking new records and they are not complete yet. There are not many for the 18 Natural History divisions, but a great many for the 80 plus 10km squares. Several new records were for Golden Saxifrages and Tilia cordata.

Mrs Pennell, Mrs Weston, Mrs Wilkin and Mr Brasier have sent in useful lists and Mr B Redman has 8 new Division records for Div. 17.

	Div	
Eleocharis uniglumis	2	I. Weston
Scirpus tabernaemontani	2	"
Rosa tomentosa	4	V. Pennell
Campanula latifolia	5	E.J. Gibbons
Narcissus pseudonarcissus	5	S. Van den Bos
Catapodium maritimum	9	B. Watkinson
Digitaria sanguineum	6	F. Lammiman
Chenopodium capitatum	6	L. Ball
" "	17	F. Brasier
Taraxacum laevigatum	10	V.P.
Coriandrum sativum	11	L.B. & I.W.
Diplotaxis muralis	14	F.B.
Bidens cernua	16	J. Ostler
Asplenium trichomanes)		
Ceterach officinarum)		
Linaria purpurea)		
Oalis corniculata)	17	B. Redman
Phullitis scolopendrium)		
Polygonum cuspidatum)		
Pteridium aquilinum)		
Rumex conglomeratus)		

Job Creation Group

Ajuga reptans	17	Koeleria cristata	12
Asperula cynanchica	16	Lycopsis arvensis	17
Brachypodium sylvaticum	17	Rorippa sylvestris	17
Cardamine amara	10	Vicia sepium	17
Chrysosplenium alternifolium	3 & 11		

MYCOLOGY

H. J. Houghton

After the long, cold winter of 1978/79, we were given a fairly dry late spring and early summer, but the rest of the year was a variable mixture of rain and shine. The autumn frosts of 1979 were slow to put in an appearance, with only one cold bout of any consequence, the rest of the autumn being mild. Thus mumerous fungi were appearing until near to Christmas. Mr. Rowe drew the writer's attention to a group of some thirty specimens of the earth star,

Geaster triplex, and photographs of these and a number of other specimens from various groups were obtained on the 10th December. In fact, after the bad winter had finished, the year proved to be excellent from a mycologist's (and mycophagist's) point of view.

The early meetings provided a few new divisional records. 4 species from 28 recorded were new at Irby Dales in Div. 3 on the 23rd June, and 2 from 6 were new from Great Scrubbs Wood in Div. 10 on the 14th July. Two further specimens from Twigmoor Woods were new for Division 2.

The annual Foray this year proved notable from a number of points of view. First, and sadly, this was the first time Miss Waterhouse had missed the meeting for many years. We must, of course, bow to the inevitable, but her experience and her patience will be greatly missed in the future as it was this year. It is to be hoped that if she is in the district and finds it possible to attend any meeting, she will allow us to welcome her again. Presumably, she will continue her good offices as referee. Secondly, of the numerous members present at the meeting, very few were of a mycological bent. The results were therefore the writer's identifications of collected specimens. The wood was very dry, and was still in a condition of cracks in the soil from early lack of rain. However, specimens from 80 species were identified, 18 beingnew divisional records.

Apart from Union Meetings, specimens and lists have been provided from a number of sources. Dr Bruce Ing, of Chester College, has provided a very welcome list of records from his own collections in Lincolnshire and his determinations of Mr S.S. Bates' herbarium specimens. A total of 20 new County and 75 new divisional records from the Acrasiales and Myxomycetes resulted. He was also good enough to confirm identification of a specimen of Cienkowskia reticulata, a rare species, which the writer had collected at the Hoplands Wood Foray in 1976 as a red plasmodium. This record should be added to the list for that Foray.

Mr Rowe has provided his usual lists and specimens collected by himself and his wife from numerous locations. One of these from Woodhall was identified by Dr D.A. Reid of Kew (through the good offices of Miss Waterhouse) as the polypore Heteroporus biennis. It had only been found once before in Lincolnshire by Dr Reid at Dunsby Wood. Mrs Jane Ostler sent me a specimen of the very artificial looking Ganoderma lucidum from Tortoiseshell Wood (New for Div. 15), and Mr Brian Featherstone, the Warden for the Trust for Langholme Wood in the Isle of Axeholme brought in a selection of specimens, three of which were new for that Isle.

The writer led a number of forays for other bodies than the Union and others of a private nature at Brumby Common Reserve, Normanby Park, Elsham woods, Black Walk Nook, Langholme Wood, Kirkby Moor and Moor Farm, and Woodhall Spa. Three new County records and numerous Divisional records resulted. Coprinus semitalis, from Kirkby Moor was kindly identified by Dr Roy Watling of the Royal Botanic Gardens, Edinburgh, and the writer was able to identify the rust Melampsora epitea on Sallow seedlings at Langholme, and the fairly common Deconica montana amongst short grass on lawns, etc., at Horncastle and other situations. In passing, it was noticed that the last species, together with other black-spored species of the Psilocybe/Psathyrella/Coprinus/Panaeolus group were very prevalent during the latter part of the year. The three species mentioned were new to Lincolnshire.

Thus, the grand total of new records for the year amounted to 24 new for the County and 204 new for the Divisions. County records are listed below, and the mycological secretary will on request supply details of the Divisional records.

The records are in the process of being translated into 10 Km. square

reference, and it is requested that if it is at all possible to quote the six figure reference of the location of any specimen or list sent in, it should be done to help in the accurate recording. Any reference should be according to the new 1 : 50,000 O.S. grid. Please do not, however, let the reference delay the sending in of specimens!

Fungus Foray held at Roxton Wood (Ref: TA 11)
on the 20th October, 1979

New County Records - NIL

New records for Div. 4 (TA 11)

Clitocybe rivulosa	Panaeolus rickenii
Coprinus cinereus	Psathyrella spadiceogrisea
Collybia butyracea	Stereum gausapatum
Entoloma sinuatum	Pseudotrametes gibbosa
Inocybe flocculosa	Grifola frondosa
Lepista nuda	Dacrymyces stillatus
Lactarius helvus	Peziza micropus
Mycena pelianthina	Helotium fructigenum
Mycena swartzii	Sphaerotheca pannosa

Species already recorded in Div. 4 - 62 species

Other Records

New County Records

Cienkowskia reticulata (Alb. & Schw.) Rost. - ex Hoplands Wood Foray, 1976. Id. Bruge Ing
Coprinus semitalis Orton - Kirkby Moor (Div. 10 TF11). Id. Dr Roy Watling
Deconica montana (Pers. ex Fr.) P.D. Orton - Horncastle (Div. 10. TF26)
Melampsora epitea Thum. on Sallow seedlings - Langholme Wood (Div. 1 SK.79)

New Divisional records

204 Species recorded

VERTEBRATE ZOOLOGY

M. Johnson

This year I received a number of unusual reports on the activities of animals during the severe weather of winter and spring.

Mammalia

On January 22nd Mr. F. Brasier reported finding the tracks of a hedgehog in snow near Scunthorpe. A number of hedgehogs were still active in the Lincoln area during November and I received a report from Mrs. Hall that hedgehogs were still visiting her garden to feed on bread and milk on November 15th.

During April I received an interesting report that harvest mice were

entering buildings in some districts to shelter from the cold weather. Several harvest mice were trapped inside one house at Great Hale near Heckington.

Mr. J. Redshaw reported that a grey squirrel had been observed living in a very open treeless situation on Boston mud flats.

On April 10th Miss J. Eastmead reported the sighting of a pipistrelle bat flying in daylight along Monks Road close to Lincoln city. This year I have been carrying out field trials with a bat detector with which I hope to improve the distribution picture on some of our less common bat species.

Reptilia and amphibia

On March 11th I visited a pond near Bardney which had been completely frozen over during the winter. I was surprised to find a large amount of ice still in the water plus the dead bodies of toads and fish which I am certain must have been trapped in the ice. Another unusual sight during the spring was an observation of toads in Bardney Forest area making their way to spawn through patches of snow after an early morning snow shower on May 4th.

Common toads were seen spawning in a pond near West Ashby on April 16th, while during a visit to Saltfleetby on April 26th fresh frogspawn was found in the ponds and a number of smooth newts were seen. Mr. P.J. Wilson reported seeing a frog still active on December 28th.

On March 19th I visited Kirkby Moor where I found the reservoir iced over from bank to bank. In spite of the cold weather however I counted 15 adders and 1 common lizard basking in the pale sunshine on the open moor.

Once again I would like to thank all those members who helped to make my report possible by supplying valuable information and specimens.

LEPIDOPTERA

J. H. Duddington

I have to report another late cold spring, lepidoptera again emerging over a long period. Immigrants have also been scarce although two very interesting migrants were recorded (see below).

It was sad to see many interesting areas of rough ground I visit yearly coming under the plough. This more than ever makes our road verges a very valuable breeding ground for many species of lepidoptera.

Butterflies

The Orange-tip (Anthocharis cardamines) has been a common butterfly, appearing in all types of habitat and breeding in gardens. Green-veined White (Pieris napi) appeared over a long period. The Large White (Pieris brassicae) and Small White (Pieris rapae) were swarming in August, probably due to an invasion from the continent. Brimstones (Gonepteryx rhamni) were quite plentiful and widespread in the south of the county but scarce in South Humberside.

It was another rather mixed season for the Browns, with a good emergence of the Wall (Pararge megera) during August in some areas, though Small Heath (Coenonympha pamphilus), Meadow Brown (Maniola jurtina) and Ringlet (Aphantopus hyperantus) were not in their usual numbers. Mr. E. Mason records the Speckled Wood (Pararge aegeria) as being present in large numbers in Bardney Forest on 12th August.

All five species of Skipper which occur in the county have been recorded, but the Chequered Skipper (Carterocephalus palaemon) has not been seen for many years and is probably extinct.

No records this year of the Holly Blue (Celastrina argiolus) but the Common Blue (Polyommatus icarus) was widespread and plentiful in some areas. Mr. E. Mason in 1978 observed the Brown Aeshna dragon-fly catching and eating Common Blues in Burton Pits. The Small Copper (Lycaena phlaeas) was very prolific during August. I examined hundreds on heather and ragwort in the Laughton district and saw only one variation: the forewings were white instead of the coppery orange colour, the spotting was normal.

Mr. Rex Johnson visited Crowle Waste on 29th June and saw the Large Heath (Coenonympha tullia) on the wing. I did not visit Risby Warren to look for the Grayling (Eumenis semele) as subsidence from mining has made the warren dangerous.

Peacock (Nymphalis io) and Small Tortoiseshell (Aglais urticae) were present in large numbers on buddleias. Red Admiral (Vanessa atalanta) was not plentiful, many disappeared after a cool spell on 18th August. Only a few records of the Painted Lady (Vanessa cardui) were received, all August observations. This year wasps were seen to take butterflies from buddleias, Small White and Small Tortoiseshell being the victims. The Large White and Red Admiral managed to shake them off.

Still no records of Fritillaries, although conditions in some of the woodlands look promising for a return of the species.

Less common records received:-

Brown Hairstreak (Thecla betulae) Bardney (A.E.S.)
Purple Hairstreak (Thecla quercus) Bardney (E.M.)
White Admiral (Limenitis camilla) Bardney (A.E.S.)
Essex Skipper (Thymelicus lineola) Fishtoft (A.E.S.), Gedney Drove (G.P.)
Comma (Polygonia c-album) Boston (A.E.S.)
Painted Lady (V. cardui) Scunthorpe (J.H.D.), Boston (A.E.S.), Bardney, Gedney Drove (G.P.)

Late butterflies:-

Small Tortoiseshell 20th October
Small Copper, 2, 18th October
Red Admiral 8th October
Small White, 2, 20th October

Moths

Over the last 10 years moths appear to have fared much better than the butterflies. Very few species have been lost, and in fact we have had

additions to the County list. This year nights were cool and numbers of moths coming to the M.V. light were down. Many species were only seen in small numbers.

We have three new County records:-
Mr. R.E.M. Pilcher took the Vestal (Rhodometra sacraria) in his trap at South Thoresby on 13th October. The species is an inhabitant of Southern Europe and North Africa.
Mr. P. Walter found a Scarce Bordered Straw (Heliothis armigera) on 8th December resting under a lamp in Scunthorpe Steelworks. It is a rare migrant in the British Isles but has almost universal distribution. The larvae are a pest on cotton, corn, tomato, tobacco, oranges, etc. and farmers are perhaps to be congratulated on the fact that this moth is only an accidental visitor and not a native.
Mr. A.E. Smith took a Juniper Carpet (Thera juniperata) at his house light on 25th October in Boston.

On 12th July a Pine Hawk (Hyloicus pinastri) came to Mr. Smith's light in Boston. There are only two other records for the County, both from Mr. Pilcher: Boston 30th June, 1955 and South Thoresby, 20th July, 1976. The Poplar Hawk (Laothoe populi), Eyed Hawk (Smerinthus ocellata) and Elephant Hawk (Deilephila elpenor) were quite numerous. A larva of the rare Bedstraw Hawk (Celerio galii) was found near Scunthorpe, the moth emerging this year.

Other interesting species:-

Humming-bird Hawk (Macroglossum stellatarum) 22nd June Goxhill (S.B.), 26th June Scawby (A.J.)
Death's Head Hawk (Acherontia atropos) 18th July Scunthorpe (S.M.)
Convolvulus Hawk (Herse convolvuli) 1st September, S. Thoresby, Muckton (R.E.M.P.)
Great Brocade (Eurois occulta) 29th August S. Thoresby (R.E.M.P.)
Poplar Kitten (Cerura hermelina), July, Holme Plantation (R.J.)
Wormwood Shark (Cucullia absinthii) Scunthorpe (F.B., A.F., J.H.D.)
Chalk Carpet (Ortholitha bipunctaria) 22nd July Kirton Quarries (A.G.)
Dotted Border Wave (Sterrha sylvestraria) July, Scotton (J.H.D.)
Twin-spotted Wainscot (Nonagria geminipuncta) 3rd September Scrubb's Wood (R.E.M.P.), 10th September Boston (A.E.S.)
White Pinion Spotted (Cosmia diffenis) 16th June Boston (A.E.S.)
Pine Carpet (Thera firmata) 3rd September S. Thoresby (R.E.M.P.)
Straw Dot (Rivula sericealis) 5th AugustGibraltar Point (R.E.M.P.)
Scarce Vapourer (Orgyia recens) 21st June Messingham Quarries (J.H.D.)
Stout Dart (Spaelotis ravida) 28th July Twigmoor (R.J.) 27th August S. Thoresby (R.E.M.P.)
Small Chocolate-tip (Clostera pigra) 5th August Scotton (J.H.D.)
Dingy Footman (Eilema griseola) 11th August New Park Wood (S.B.,J.H.D.)
Leopard Moth (Zeuzera pyrina) 28th July Scotton (J.H.D.)
V Pug (Chloroclystis coronata) 11th August New Park Wood (S.B., J.H.D.)
Small Yellow Wave (Hydrelia flammeolaria) 23rd June Swallow Vale (R.J., J.H.D.)
Hedge Rustic (Tholera cespitis) 25th August Brumby N R. (J.H.D.)
Red Underwing (Catocala nupta) 1st November Laughton (R.J.) 27th September Brumby Wood (J.H.D.)
Beautiful Carpet (Mesoleuca albicillata) 23rd June Swallow Vale (R.J., J.H.D.)
Pinion Spotted Pug (Eupithecia insigniata) 6th June Bardney (R.E.M.P.)

Oak-tree Pug (E. dodoneata) 2nd June, Bardney (R.E.M.P.)
Ochreous Pug (E. indigata) 6th June S. Thoresby (R.E.M.P.)
Satyr Pug (E. satyrata) 16th June S. Thoresby (R.E.M.P.)
Ash Pug (E. frascinata) 5th July S. Thoresby (R.E.M.P.)
Juniper Pug (E. sobrinata) 12th July S. Thoresby (R.E.M.P.)
Dark Umber (Philereme transversata) 5th August Gibraltar Point (R.E.M.P.)
Wood Tiger (Parasemia plantaginis) Bagmore (J.H.D.)
Pinion Streaked Snout (Schrankia costaestrigalis) 24th July Swinn Wood (R.E.M.P.)
Bordered Pug (E. succenturiata) 5th July S. Thoresby (R.E.M.P.)
Barred Rivulet (Perizoma bifaciata) 24th July Swinn Wood (R.E.M.P.)
Shell Scallop (Calocalpe undulata) 16th July Swinn Wood (R.E.M.P.)

In conclusion I would like to thank the following who have so kindly sent me their records for the season:-
Mrs. A. Frankish, Mrs. A.L. Goodall, Messrs. D. Brant, R.E.M. Pilcher, A.E. Smith, E. Mason, F. Brasier, G Posnett, J. Redshaw, R Johnson, A. Johnson.

Correction

In Transactions L.N.U., Vol. XIX No. 3 Parts 1 and 2 1978, p. 120 it was indicated that the "very local Duke of Burgundy Fritillary (Hamearis lucina) was getting scarce around 1961 in the Boston area". This locality was taken from an incorrect entry in the LNU records. The species actually occurred between Bourne and Stamford during this period.

CONCHOLOGY (NON-MARINE)

E.J. Redshaw

The impetus for recording species for the 10km survey slowed down during 1979, partly because additions became increasingly difficult to find, being mainly the very small species, and partly due to other commitments on time available. The writer is grateful to Mrs. V. Wilkin for providing details of species recorded at Union field meetings and to Mrs. S. Barker for assistance in the Grimsby-Louth area.

The following 30 new 10km records were added to the post-1950 survey maps:-

TF/00 Stamford R. Welland & meadows EJR Sept. 1979	Valvata cristata Physa fontinalis Lymnaea truncatula Deroceras laeve	
TF/01 Holywell lake V.W. 29.7.79	Valvata piscinalis Valvata cristata Anodonta cygnea Succinia putris	
TF/02 Grimsthorpe Park, lake & margins EJR 2.9.79	Valvata cristata Planorbis planorbis Succinia putris	Vallonia excentrica Vitrea crystallina Deroceras laeve

TF/38 Louth Hubbard's Hills SB Dec. 1979	Pupilla muscorum Vitrea contracta
TF/49 North Somercotes Donna Nook, dunes & slacks SB Oct. 1979	Hydrobia ventrosa Lauria cylindracea Cernuella virgata Trichia plebeia
SE/81 Eastoft Paupers Drain VW 28.10.79	Lymnaea palustris Planorbis carinatus Bathyomphalus contortus
TA/10 Irby Dales VW 23.6.79	Vallonia excentrica Vitrea contracta Helicella itala
TA/11 Roxton Woods & pond VW 20.10.79	Acroloxus lacustria Limax maximus
TA/30 Humberstone The Fitties VW 8.12.79	Armiger crista
TA/30 Tetney Lock SB Dec. 1979	Aegopinella pura

Mrs. Wilkin reports that the post-glacial fossils are still creating much interest, and that Dr. Preece visited the Broughton area twice during the autumn to collect specimens for carbon dating at the British Museum (Nat.Hist.). Mrs. Wilkin is collecting 50 shells of various species of recently live molluscs from the same area which will be used as "controls" in the dating process.

ORNITHOLOGY

E. J. Garlick & P. J. Wilson

Two surveys were undertaken during 1979 and seven field meetings were held. The Collared Dove survey entailed recording flocks and singing males throughout the county between April and June. The Snipe Dales breeding bird survey was initiated at a reconnaisance visit accompanied by the warden, thereafter nine visits were made by the survey team. It was a large area to tackle but being almost all open landscape it proved manageable and very enjoyable. The Ornithological Section site surveys are presented in full, that of Dole Wood is of particular interest, not only being the first winter site survey we have done, but one that can also be compared with the previous breeding bird survey there. The Dole Wood winter survey also demonstrates the remarkable effects of a brief snowfall on the birds that winter in and around woodlands.

Members also took part in the on going long term national surveys such as the Heron census and winter estuary counts. There was also a preliminary Nightjar census, the national census for this species is to take place in 1981. The Nightjar has declined drastically nationally in the last few years and the Lincolnshire results unfortunately demonstrate this probably better than anywhere else. In the late 1960s there were thought to be 44 pairs in Lincolnshire, the 1979 census showed only 14 pairs. The loss of two thirds of the breeding population is thought to be due mainly to changing land use and the maturing forestry commission plantations.

Two evening meetings were well attended. The first to Branston Island was almost washed out by a very heavy thunderstorm, but the party was rewarded later by clear notes of Quail and was able to observe at close quarters a hatch of mayfly on the river bank. The other to Stapleford Woods for Nightjar was also a success. Three coastal meetings were held - at Goxhill in April, Fleethaven Outfall in September and an evening meeting at Frieston Shore in October at high tide. Waders in their thousands could be seen at their high tide roosts at Fleethaven; Black Tern and Marsh Harrier were seen later over the sea and salt marsh, with Whinchat and Wheatear on the sea bank. At Frieston a very high tide reached the sea bank at dusk and massed waders flying inland were heard rather than seen, while the Brent Geese remained out at sea. In July thirteen people embarked at South Ferriby on the Humber Sloop "Amy Howson" for a cruise up river into the Trent and Ouse. A calm sunny day gave excellent views of Read's Island and Whitton Sands. Some 700 Shelduck were counted and there were large creches of young. In November at Covenham Reservoir the hide proved an advantage for close viewing ona sunny but windy day, and a good variety of duck species and the Great Crested Grebe showed to advantage. Later in the day near Donna Nook Brent Geese, a small flock of Snow Bunting and a Kingfisher were seen.

Meetings have been very well attended this year and several new members have been welcomed.

Among reports from individual members the severe winter of 1979 brought an unusually large number of records of non-resident Grebes. These included sightings of Red-necked Grebe on inland waters at Branston, Tattershall Bridge, Sleaford, Spalding and Baston Fen, and of Slavonian and Black-necked Grebe on the Welland. Hen Harrier was recorded in increased numbers both on the coast and inland.

The Wash counts at the end of January indicated a vast increase over recent years of some wildfowl species. (Counts for 1978 are given in brackets) Pink-footed Geese numbered 1,483 (305), Brent Geese over 7,000 (4,393) with over 4,000 still present at the end of April; Shelduck over 12,000 (c.5,000); Wigeon over 4,000 (49). Wader species which showed a marked increase were Oystercatcher 9,000 (6,600); Golden Plover 163 (23); Grey Plover 980 (530); Snipe 29 (4); Bartailed Godwit 7,800 (676); Curlew 1,077 (894). Counts of Knot, Dunlin and Redshank were much the same as in previous years. Also at the end of January 2,630 Twite were counted on the frozen saltings.

There was much evidence that the severe winter affected Wren, Dunnock and Goldcrest. Their songs were seldom to be heard in woodland areas but Wren and Dunnock survived in sheltered gardens. In early January came widespread reports of large movements of Redwing and Fieldfare. In the Scunthorpe area a Crane was present for most of January. A notable summer visitor to the county was a male Great Reed Warbler present for two weeks in July at Burton by Lincoln gravel pits. Bittern was recorded at two sites near Lincoln in August and November. In September a Snow Goose was seen with the flock of feral Greylags on Baston Common Gravel Pits, and an Egyptian Goose was reported at Kirkby on Bain.

FURTHER NOTES ON THE MACRO-LEPIDOPTERA OF THE LINCOLNSHIRE FENS AND MARSHES

In Volume XV of the Transactions of the Lincolnshire Naturalists' Union there was published a paper on the larger moths to be found in the Lincolnshire Fens and Marshes with some notes on their ecological requirements and the factors which influenced their distribution. I was prompted to write this by the realisation that the earlier Lepidopterists in the County had tended to devote their attention to the woods and the heathland at the expense of the wetlands. This was due, at least in part, to the relative inaccessibility of such habitats and the difficulty in working them effectively with the materials at that time in their hands. It was suggested that there was still much to learn about these insects in order to take steps for their conservation.

That paper was written twenty years ago. Further work has shown that Lincolnshire has still a rich wetland moth community. Some new species have been added to the County list and others, previously believed to be lost, have been rediscovered in a healthy state.

Typical of reed beds are the Wainscot moths, but not all reed beds are acceptable to individual species. One which prefers thin, scattered beds of Phragmites is the Flame Wainscot, Melianea flammea Curt., a very local species in Britain and one virtually confined to the fens of Norfolk, Suffolk and Cambridgeshire. I found a single specimen, drying its wings, and later larvae in its present only known site in the County.

Of the other less common Wainscots, preferring in general denser reed beds, the position in spite of the increasing loss of suitable habitat appears to be satisfactory. These include Leucania obsoleta Hubn. the Obscure Wainscot, formerly believed to be rare but now common and widespread, Nonagria geminipuncta Haw., the Twin-spotted Wainscot, N. dissoluta Treit., the Brown-veined Wainscot and Arenostola phragmitidis Hubn., the Fen Wainscot. Of the typha preferring species, Nonagria typhae Thunb., the Bulrush Moth occurs wherever its food plant may be found, but two other species, exceedingly local or rare in Britain have been added more recently to the County List. One, Nonagria algae Esp., the Rush Wainscot, discovered by Martin Townsend, appears to occur at one site only in the County. The larva feeds first on the true Bulrush, Scirpus lacustris and later on the reedmaces, Typha latifolia and T. angustifolia. The other species, N. sparganii Esp., Webb's Wainscot, I have only found in two localities and one of these is lost. The larva feeds first on Iris pseudocorus and in later instars on T. latifolia and T. angustifolia. Leucania straminea, the Southern Wainscot, appears to be rare and getting rarer. Its foodplant is Phaleris arundinacea and it is widespread in Britain. It is probably overlooked as it is not easily distinguished, especially at night, from its more common congeners.

Arenostola extrema Hubn., the Concolorous Wainscot, has always been a rare and local moth in Britain. It was believed to be almost confined to Wood Walton Fen at the present day, but in 1974 G. E. Haggett and I found the species in Bardney Forest, one coming to light and a pair were found in cop. The foodplant is Calamagrostis epigeios. Its congener, A. fluxa Hubn., the Mere Wainscot, occurs commonly in another part of the Forest.

A most interesting discovery - or, rather, re-discovery for there is a previous record of the species in 1902 in a single specimen taken at light - was that of Hydrillula palustris Hubn., the Marsh moth. In 1970 a male came to the light trap in my garden at South Thoresby and further investigation showed that it occurred in two neighbouring marshes. The following year I found it widely

distributed over the Reserve at Gibraltar Point and in 1972 it was common, almost abundant, in the Theddlethorpe-Saltfleetby Reserve, where the rough sandhill habitat resembles its typical habitat on the continent.

Another re-discovery of a species for which there is no County record for nearly a hundred years is that of Celena haworthii Curt., Haworth's Minor. I found it commonly in a wet bog near Woodhall and it has been recently found in some abundance in the north-west of the County. Its foodplant, Eriophorum vaginatum, is not common in Lincolnshire.

This list is not exhaustive but it should be sufficient to show that Lincolnshire, in spite of the continual loss of its wetland is still rich in its marsh and fenland species. Although the sites in which such species occur are often restricted, where they do occur, they usually occur in sufficient numbers to constitute a healthy and viable population. Fortunately many of these sites are within Reserves but some are still extremely vulnerable, for factors outside the Reserves, such as draining with the concomitant lowering of the water table can cause the disappearance of the foodplants and exterminate once and for all, as they have already done in so many places, these local and interesting species.

R.E.M. Pilcher

DRAGONFLIES RECORDED IN THE SOUTH LINCS FENS, 1979

Generally 1979 has been an exceptional year for dragonflies. Starting poorly, but gaining interest and reaching by autumn a richness not experienced for several years. In particular the numbers of Aeshna grandis and A. cyanea have been far in excess of those seen in previous years.

Species recorded:

53/01 Barholm area	Aeshna cyanea, A. grandis, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans, Pyrrhosoma nymphula, Sympetrum striolatum.
53/02 Bourne woods, pools	Aeshna cyanea, Anax imperator, Enallagma cyathigerum Ischnura elegans, Sympetrum striolatum.
Upper lake, Grimsthorpe park	Sympetrum striolatum. (an exceptionally poor site, the habitat indicated greater expectations)
53/12 Guthram area, R. Glen.	Aeshna cyanea, A. grandis, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans, Pyrrhosoma nymphula, Sympetrum striolatum.
53/13 Neslam Bridge area	Aeshna cyanea, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans, Sympetrum striolatum

53/20 Falls Bridge area	Aeshna cyanea, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans, Sympetrum striolatum.
53/21 Welland bank borrowpits area	Aeshna cyanea, Agrion splendens, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans Pyrrhosoma nymphula, Sympetrum striolatum.
53/31 Whaplode fen area.	Aeshna cyanea, A. grandis, Coenagrion pulchellum, Enallagma cyathigerum, Ischnura elegans, Sympetrum striolatum.

E. J. Redshaw

COLLARED DOVE SURVEY 1979

The Collared Dove was first recorded in Lincolnshire in 1952. Since then it has spread abundantly and over a wide range, until in some areas it is now regarded as a pest. Although there are at present no overt measures for its control it seemed wise to monitor the size and distribution of the population in the county, and this was attempted in 1979 after a pilot survey in the previous year.

Method

Copies of the map of 10 km squares were sent out to observers with a request that singing males be recorded as a fraction of the total flock seen at any one site e.g. $\frac{3}{19}$ signified that there were 3 males singing at a site at which 19 birds were recorded. Observers were asked to write their figures directly on to the maps as nearly as possible on the exact location of the siting, as this minimised paperwork for the observer and organisers alike and ensured that variations in distribution were quickly apparent.

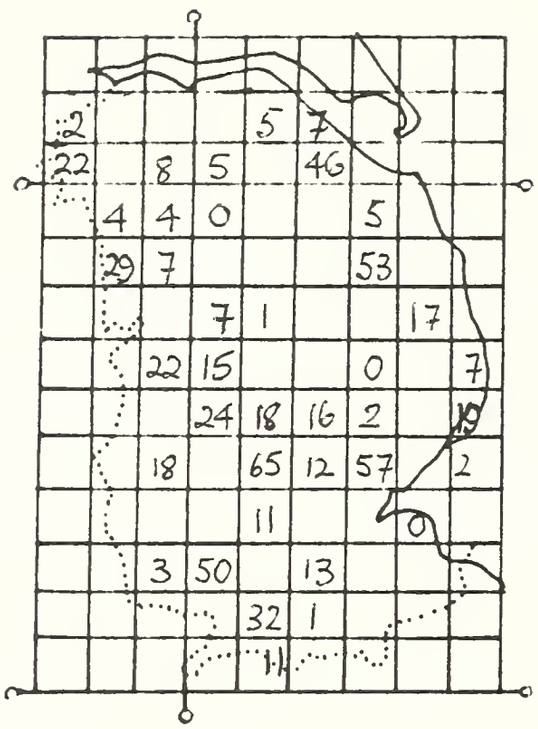
Coverage

Completed returns were received for 42 10km squares in the county.

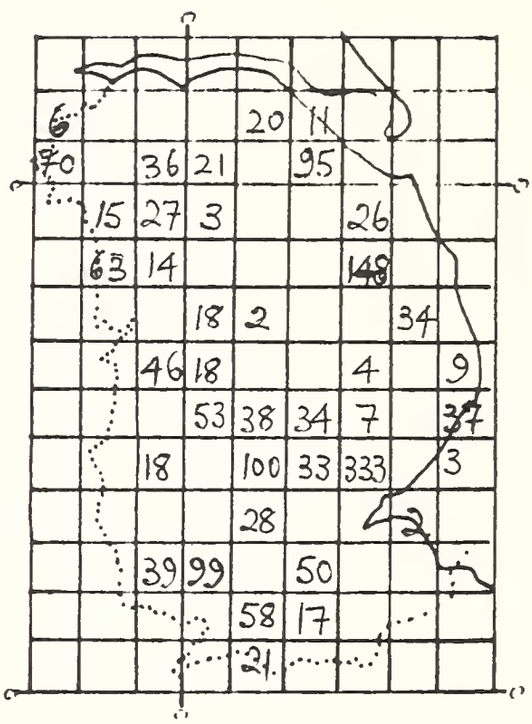
Results

577 singing males were recorded out of a total of 1636 birds.

As one might expect, there was a greater density of population in the urban areas, one observer remarking that in Grantham town, every street of old-established gardens held its pair of Collared Doves. There were, however, one or two pairs in many villages, hamlets and farmsteads throughout the county, and nowhere was this more marked than in TF38, centred on Louth, where there were



Collared Dove - 1979
Singing males



Collared Dove - 1979
Flock size

records for 22 tetrads in the one 10km square. Small woods amid arable country were also very productive, as evidenced by TF02, where 28 sites produced 50 singing males with a total of 99 birds.

Also as expected, heavy concentrations were found in grain stores, both in rural areas and in the dock areas of Boston. TF 34, which includes Boston Docks produced 323 birds, although in the largest flock, of 100 birds, only 6 were singing.

Thanks are due to over 50 observers who took part in the survey at considerable cost to themselves in time and petrol. Counting conditions were not easy owing to the late cold spring. The doves did not sing much during the early part of the year, though they carried on well into the summer. More than one observer mentioned hearing much more song when out in the field before 0700 hours than in the same area later in the day, which is not unusual in the bird world but is indicative of the amount of effort put in by many observers to a relatively simple survey.

N. Goom

BREEDING BIRD SURVEY OF SNIPE DALES RESERVE 1979

Snipe Dales is a local nature reserve administered by the L. & S.H.T.N.C. located in the south part of the Wolds, to the north of the Horncastle Spilsby road. In the summer of 1979 nine L.N.U. members carried out a breeding bird survey of the reserve with the help and co-operation of the reserve manager Mr. Roger Wardle, and the Trust.

Site Description (Fig. 1)

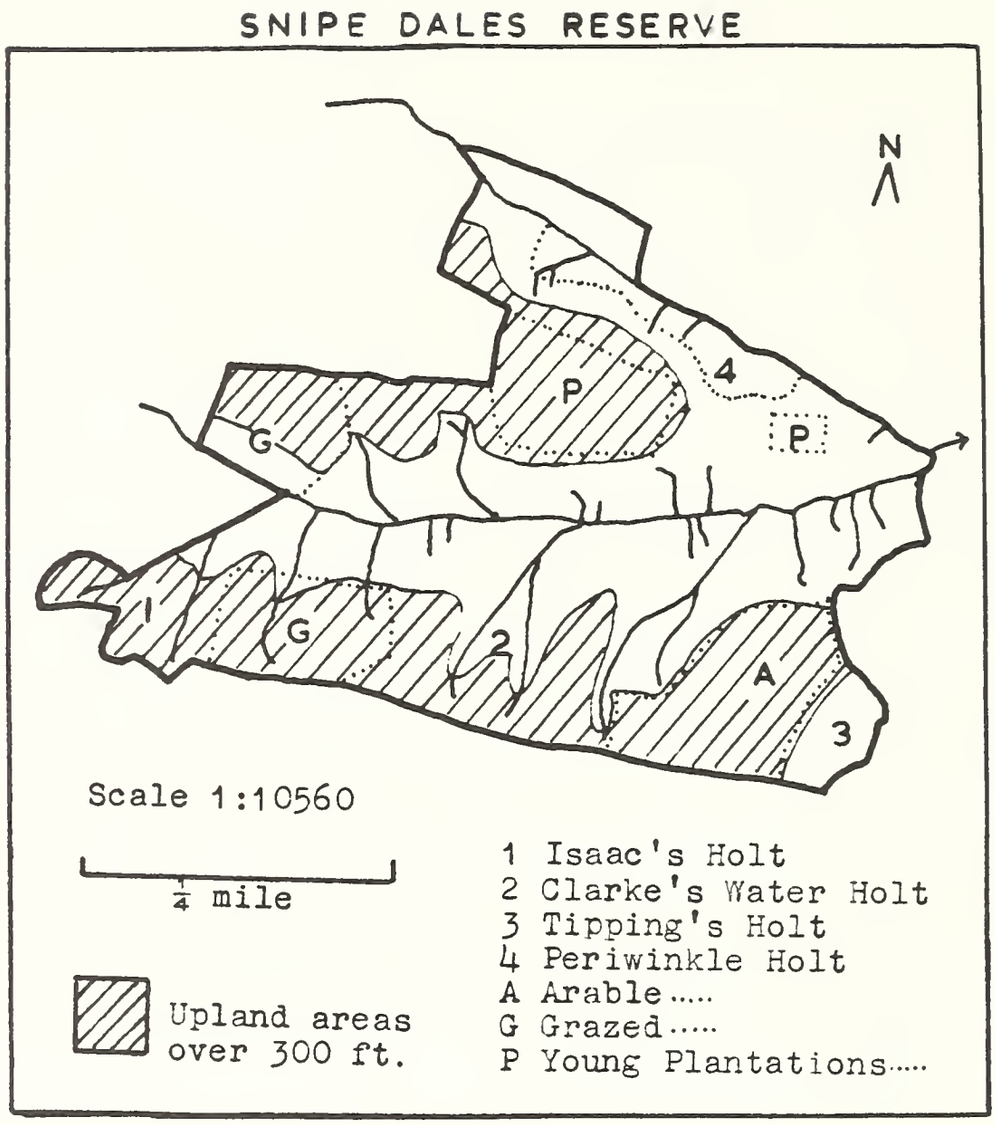
The 120 acre area presents a broken landscape. The low sandstone plateau of just over 300 feet is dissected by two main streams. Spilsby sandstone outcrops on the interfluves and steep valley sides; and Kimmeridge clay is exposed on the lower slopes and valley bottoms. Several of the south bank tributaries of the southern main stream have cut well back into the sandstone resulting in much greater dissection on the southern ridge than on the ridge between the two main streams. Superficial deposits are abundant with boulder clay on the higher parts, flint deposits on the stream banks, peat in the hollows and sandy downwash on the valley sides. The spring line at the junction of sandstone and clay, and the peat hollows give rise to extensive marshy areas especially on the slopes of the southern ridge. The vegetation on the drier slopes is mainly rough grass with elder and hawthorn scrub. The valley bottoms and marshy areas give rise to marsh communities which include large areas of tussock sedge, willow herb, horsetail, marsh marigold and meadow sweet. Parts of both ridges have grassland areas improved by grazing, and a large area at the eastern end of the southern ridge is arable. Five acres of the ridge between the two main streams has recently (1977) been planted with oak, hawthorn, ash and beech; and there is a small older plantation to the east of it. The Holts consist of alder and willow carr, with hazel at the eastern end of Periwinkle Holt, and mature trees of sycamore with some oak in Isaac's Holt on the higher part between the two tributory streams, while Clarke's Water Holt has mainly elder and bracken on its higher parts. Tipping's Holt and the arable area were not included in the survey.

Method

The B.T.O. Common Bird Census method was employed using maps on the scale of 1:2,500. Nine visits were made between early May and mid-July. The May start meant that the territories of some early breeding species such as Mistle Thrush may have been missed, and the importance of the reserve as a feeding area for passage migrants could not be fully demonstrated. It is probable that the number of territories of some species has been under-estimated where there were insufficient registrations to meet B.T.O. criteria.

Results

Table 1(a) lists the birds which bred or held territory on the reserve. The territories of 256 pairs of 37 species have been mapped. Each habitat was densely populated with a good variety of species suggesting stability or maturity of habitat. The marshy areas for example provided breeding sites for seven pairs of Snipe, twenty-six pairs of Sedge Warbler and sixteen of Reed Bunting. On the higher rough grassland with some scrub areas, the twenty pairs of Yellowhammer, fourteen of Skylark and ten of Meadow Pipit showed high densities. Pheasant and Partridge made use of the new plantation and the higher edge of the reserve. Whitethroat (twenty-two



pairs) the finches and Grasshopper Warbler occupied the scrub areas in the lower parts of the reserve. The latter with five pairs was probably at its maximum density, all suitable areas being occupied. In the Holts Willow Warbler (nineteen pairs) was the characteristic bird of the damper areas, and high numbers of Blackbird and Dunnock (seventeen pairs each) were recorded, with six pairs of Robin. Isaac's Holt, though drier and supporting larger trees is dominated by Sycamore with little undergrowth which led to low numbers of woodland edge species such as Blackcap and Garden Warbler. Lack of mature woodland also meant that tit nesting sites were few. Two species had lower records than might have been expected. Wren suffered a drastic decline in the hard winter preceding the survey and only two pairs were recorded on the whole of the reserve. Spotted Fly-catcher was represented by one pair only. This is a species which appears to be declining nationally for reasons outside Britain.

Of the birds which used the reserve for feeding (Table 2(c)) only Sparrowhawk, Short-eared Owl and Swift were not known to have held territory within the area immediately adjacent to the reserve. For some of the other birds listed, farm buildings in the vicinity provided nest sites and the reserve formed the most important part of their feeding area. The Barn Owl was seen on several occasions at dusk successfully hunting and carrying off food over the eastern boundary of the reserve. On one occasion forty-one Jackdaws were feeding on the new plantation. Although the main purpose of the survey was to census the breeding birds it

was noted that on the first visit in early May, Fieldfare, Wheatear and Chiffchaff were passing through, and by the last visit in July small parties of Goldfinch were present.

The survey has shown that with the exceptions noted, of woodland birds and those species which have declined nationally, the reserve with its variety of habitats is extremely well populated with breeding birds, with an overall density of 2.3 per acre (5.7 per ha). It forms too an important part of the feeding ground of species breeding in the adjacent area, and is important to passage migrants.

P.J. Wilson & E.J. Garlick

References

1. International Bird Census Committee 1969, Bird Study 16: 248-255

Members taking part in the survey were: D. Adams, J. Garlick, N. Goom, M. Goom, G Knight, V. Knight, V. Pennell. V. Wilkin, P. Wilson.

Table 1(a) Birds which bred or held territory (No. pairs)

Kestrel	1	Garden Warbler	1
Red-legged Partridge	3	Blackcap	3
Grey Partridge	3	Willow Warbler	19
Pheasant	5	Spotted Flycatcher	1
Snipe	7	Willow Tit	1
Woodpigeon	8 est.	Blue Tit	3
Turtle Dove	4	Great Tit	2
Cuckoo	2 est.	Magpie	1
Skylark	14	House Sparrow	3
Swallow	1	Tree Sparrow	2
Meadow Pipit	10	Chaffinch	4
Wren	2	Greenfinch	3
Dunnock	17	Linnet	12
Robin	6	Lesser Redpoll	5
Blackbird	17	Bullfinch	1
Song Thrush	5	Yellowhammer	20
Grasshopper Warbler	5	Reed Bunting	16
Sedge Warbler	26	Corn Bunting	1
Whitethroat	22		

(b) Possibly bred

Mistle Thrush

(c) Birds which used the reserve for feeding

Sparrowhawk	House Martin
Stock Dove	Pied Wagtail
Barn Owl	Jackdaw
Short-eared Owl	Carrion Crow
Swift	Starling

(d) Birds Feeding on Passage

Wheatear	Chiffchaff
Fieldfare	Goldfinch

THE IMPORTANCE OF DOLE WOOD NATURE RESERVE FOR WINTERING BIRDS

Dole Wood, an L & SHTNC Nature Reserve near Thurlby by Bourne (Map ref: TF 092162) was the subject of a summer survey in 1975 (Trans. LNU XIX 1976). A further survey was carried out during the winter of 1977/78 to investigate the extent to which the reserve was used by birds in winter. Aspects discussed here are the composition of the bird community, the relative abundance of species and the relative importance of the four habitats which make up the reserve.

Fig. 1 shows these habitats:-

1. Mature oak and ash wood with hawthorn, hazel and bramble understorey 7.6 acres

2. A scrub belt with mature trees consisting of a 330 yard stretch of overgrown railway track with an average width of 20 yards, and 198 yards of overgrown bank, ditch and hedge 8 yards wide 1.6 acres

3. Open elm wood with little undergrowth 2.6 acres

4. A grazed field completely enclosed by 1 - 3 above 7.5 acres.

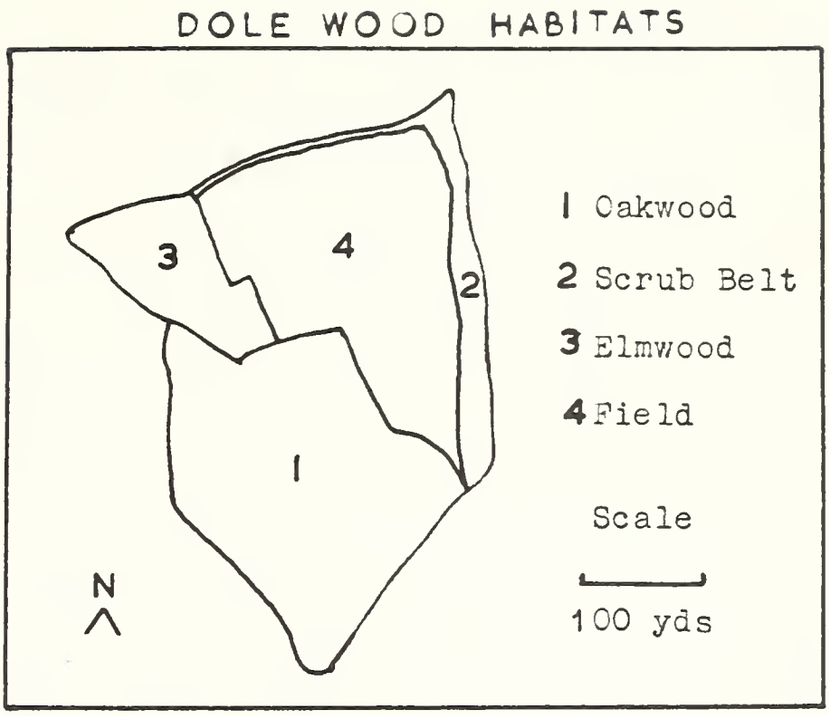
METHOD OF SURVEY

Since birds in winter do not form a stable sedentary population it is not possible to census by the territory mapping method as in summer. Instead an attempt has been made to record the total number of birds present on the reserve during a stated period of time. Ten LNU members took part in the survey and four visits were made between December 1977 and March 1978. For recording purposes the oakwood area was divided into three belts. The birds in all sections were recorded on a base map during a 75 minute period of observation on each visit. 75 minutes was considered the longest time possible without causing undue disturbance. By noting flight paths, cross-referencing observers' recordings and notes and by keeping the areas small, the risk of recording the same bird or flock more than once was reduced. Some birds used more than one habitat during a count period and these have been asterisked on Table 1 and recorded only once in the totals. An example is for 19th March, when a pair of Long-tailed Tits nest-building in the oakwood, were also seen along the scrub belt on their forays to gather nest material from beyond the reserve. The scrub was very important to them as a routeway at this time. The birds so marked in the elmwood spent little time there and were seen to move on into the scrub or oakwood. Most of those assigned to the elmwood were feeding near its edges. All visits were made in fine weather, but on 21st January there was a thin snow cover both on open ground and in the woods after three days of hard weather - the only bird on the field that day was one Skylark briefly.

RESULTS

1. Composition of Bird Community

The results of the survey are shown in Table 1. The average number of birds present during a 75 minute period was 158, giving an average density of 8.2 per acre (20 per hectare). 35 species were recorded, 17 of them on all four dates. Additional records outside the count times included one Tawny Owl in the oakwood and a small flock of 20 House Sparrows in the scrub belt in the afternoon, presumably going to roost. Birds flying over the reserve included three species of



Gull, Mallard, Jay, Woodpigeon and Collared Dove. Two dead birds, a Redwing and a Fieldfare were found on 25th February following the severe weather spell.

2. The Survey dates compared

In total the December count was higher than any other. The oakwood accounted for most of this, also the field then had more than twice as many birds as on any other count date. In the wood the tit parties were larger than later in the winter. The Treecreeper, Lesser Spotted Woodpecker and Nuthatch recorded in December only were associating with the tits in the interior parts of the oakwood. The thrush species were an exception. They moved into the wood in January with the onset of severe weather. In the December count there were only 12, in January 38 including three species not recorded in December. Most of them were feeding on the only clear ground under the thick hawthorn bushes in the oakwood. The Wren population apparently dropped from 9 in December to only 2 in January, yet it was up to 9 again in February and March. Woodpigeon numbers fluctuated similarly. Though the total number of birds in the oakwood was lowest in February the Robin population was highest in that month, in this and in its other habitats. In contrast by February the Blackbird numbers had almost halved in the oakwood but had increased in adjacent habitats, probably due to the establishment of breeding territories. Though the number of birds recorded in March did not differ substantially from the two previous counts there were marked differences in distribution. Only the wooded areas are concerned as the field was deserted throughout the count period. Long-tailed Tits were reduced to two pairs indicating that territories were already defined (cf. Summer survey 1975 - 2 territories). Dunnock, Blue Tit and Bullfinch had also paired and more had moved into the oakwood. The migratory thrushes had moved out.

3. The habitats compared

Only five species were common to all habitats. These were Dunnock, Blackbird, Blue Tit, Jay and Chaffinch, the latter only on the edge of the oakwood habitat. Eleven species were recorded almost exclusively in one habitat. No species used the elmwood exclusively.

Oakwood	Scrub Belt	Field
Lesser Spotted Woodpecker	Collared Dove	Lapwing
Nuthatch	Linnet	Blackheaded Gull
Treecreeper	Yellowhammer	Skylark
		Jackdaw
		Reed Bunting

It is obvious that the elmwood and field were relatively unattractive to wintering birds (Table 1). Overall the elmwood was the least attractive area. Very few individual birds were recorded only there. Even some of those assigned to this habitat were seen to make short excusions into adjacent areas. The field was the preferred habitat of a limited number of species which used it regularly in small numbers. The oakwood and the scrub belt are of particular interest and merit comparison in some detail. Table 2 shows the relationship between area and number of birds in the two habitats.

Table 2

Habitat	Area		Dec.		Jan.		Feb.		Mar.	
	Acres	Ratio	Birds	Ratio	Birds	Ratio	Birds	Ratio	Birds	Ratio
Oakwood	7.6	4.75	131	3.5	96	2.1	82	1.8	91	2.2
Scrub Belt	1.6	1.00	37	1.0	46	1.0	46	1.0	42	1.0

Assuming a direct relationship between size of area and the number of birds one could expect 4.75 times as many in the oakwood as in the scrub belt. The table shows that this is not so, in fact in the last three counts there were only approximately twice as many. The scrub belt appears to be more attractive to birds than the oakwood habitat. Table 3 compares the observed number of birds with the number to be expected if size of area were the sole factor in the distribution.

Table 3

Acreage	Oakwood 7.6				Scrub Belt 1.6				Totals 9.2			
	Dec.	Jan.	Feb.	Mar.	Dec.	Jan.	Feb.	Mar.	Dec.	Jan.	Feb.	Mar.
Observed	131	96	82	91	37	46	46	42	168	142	128	133
Expected	139	117	106	110	29	25	22	23	168	142	128	133

A Chi square test indicates that statistically the December observations are not significantly different from those theoretically expected (Chi square value 2.3, giving a probability of between 10% and 20% that the difference could be a chance occurrence). On the other three occasions however there is a probability of less than 0.1% that the differences between observed and expected numbers of birds in the two habitats are chance occurrences. (Chi square values January 20.4; February 30.3; March 18.0). Thus for three out of the four counts it is possible to give strong statistical support to the view that the bird population is denser in the scrub belt than in the compact woodland area.

Table 1 Dole Wood - Registrations during 75 min. periods Winter 1977/78

	Oakwood				Scrub Belt				Elmwood				Open Field				Totals			
	17 D	21 J	25 F	19 M	17 D	21 J	25 F	19 M	17 D	21 J	25 F	19 M	17 D	21 J	25 F	19 M	17 D	21 J	25 F	19 M
Acreage		7.6				1.6				2.6				7.5				19.3		
Kestrel Falco tinnunculus	1										1*						1		1	
Pheasant Phasianus colchicus					1				2								3			
Lapwing Vanellus vanellus															1				1	
Black-headed Gull Larus ridibundus													5				5			
Woodpigeon Columba palumbus	15	6	12	14	1										4		16	6	16	14
Collared Dove Streptopelia decaocto						2												2		
Lesser Spotted Woodpecker Dendrocopus minor	1																1			
Skylark Alauda arvensis														1				1		
Wren Troglodytes troglodytes	9	2	9	8	1		3	1		1		1					10	3	12	10
Dunnock Prunella modularis	9	7	5	13	1	7	6	7	1	2	1	1	1				12	16	12	21
Robin Erithacus rubecula	4	4	11	8	1		5	4	1		2						6	4	18	12
Blackbird Turdus merula	9	14	8	6	4	4	6	6	1		2	4	3		1		17	18	17	16
Fieldfare Turdus pilaris	3												1				4			
Song Thrush Turdus philomelos		5	1			1	2	1										6	3	1
Redwing Turdus iliacus		16				1												17		
Mistle Thrush Turdus viscivorous		3	1								1	1						3	2	1
Long-tailed Tit Aegithalos caudatus	12	9	8	2				*2				2					12	9	8	4
Willow Tit Parus montanus	5	1	3	1	2												7	1	3	1
Coal Tit Parus ater	3				2												5			
Blue Tit Parus caeruleus	29	11	11	16	8	4	12	5		2		2	2				39	17	23	23
Great Tit Parus major	5	6	4	3	1	1	1	2	2*								6	7	5	5
Nuthatch Sitta europaea	1																1			
Treecreeper Certhia familiaris	1	2	1	3													1	2	1	3
Jay Garrulus glandarius	3	1	1	3	1		1				*2				1		4	1	3	3
Jackdaw Corvus monedula													1				1			
Rook Corvus frugilegus		1	1										8				8	1	1	
Starling Sturnus vulgaris	2	4	4	4		3	2	2							1		2	7	5	6
House Sparrow Passer domesticus		1		2	1	3	1										1	4	1	2
Tree Sparrow Passer montanus	3	2		1	3	3	4	4									6	5	4	5
Chaffinch Fringilla coelebs	4			1	1	1			1						1		6	1	1	1
Greenfinch Carduelis chloris		1	1	1		1												2	1	1
Linnet Acanthis cannabina								1												1
Bullfinch Pyrrhula pyrrhula	12				5	7	3	4	4								19	3	4	9
Yellowhammer Emberiza citrinella					2	12	1	5			*1						2	12	1	5
Reed Bunting Emberiza schoeniclus															1				1	
Total birds	131	96	82	91	37	46	46	42	6	5	6	11	21	1	10	0	195	148	144	144
Total species	20	19	17	17	16	14	12	13	5	3	4	6	7	1	7	0	26	24	24	21

The scrub belt consists mainly of Hawthorn, Blackthorn, Bramble, Hazel and Rose about 12 to 15 feet high, with Oak, Ash and Maple up to 40 feet. The plant species are similar to those of the oakwood but the scrub lacks the high crown canopy of the larger trees of the wood's interior, yet the density of birds on all visits was greater than in the woodland. However the scrub belt's understorey canopy was vertically continuous with that of its trees. The edge of the oakwood was similar but in the centre shrub species occurred only occasionally and their canopy was much lower than that of the larger trees. It is suggested therefore that the scrub belt had a relatively greater sheltered feeding area than the oakwood. Another factor to consider is that for 198 yards the scrub belt was bounded on both sides by grassland and the other 330 yards on one side by grassland with arable on the other side, whereas the woodland had only 230 yards of its edge bounded by grassland, the rest was adjacent to plough and elmwood. This situation is bound to affect the distribution of birds which use both grassland and scrub/woodland for feeding.

Turning to the species present in the two habitats Fig. 1 shows that the oakwood held the greater number of species. Nineteen species were common to both habitats. The oakwood also contained seven species which were not seen in the scrub belt and except for the Kestrel, they were foraging deep in the wood. The scrub had only four species absent from the wood, Yellowhammer being the most abundant.

Table 4 Relative Abundance (percentage) - Total counts

Oakwood		Scrub Belt	
Blue Tit	17	Blue Tit	17
Woodpigeon	12	Dunnock	12
Blackbird	9	Blackbird	12
Dunnock	8	Yellowhammer	12
Long-tailed Tit	8	Bullfinch	11
Wren	7	Tree Sparrow	9
Robin	7	Robin	6
Great Tit	5		
Bullfinch	4		

Table 4 shows the relative abundance of species in each habitat. In each case those listed formed almost 80% of the birds present. It appears therefore that though the scrub belt had a greater density of birds the oakwood was richer in species.

Few studies of winter bird populations in other areas are available for comparison. Hope Jones (1975) estimated from sample belt transects the winter density of birds in a sessile oakwood in Merioneth to be not more than 3.6 per ha. Beven (1953) calculated 4.9 to 9.4 per ha. for pedunculate oakwood on Bookham Common (quoted in Simms 1971) 4.0 to 7.4 per ha. for Badby Woods. With a calculated 20 per ha. Dole Wood Reserve appears to be an exceptionally favoured area for wintering birds as it was also found to be in summer 1975 with a breeding bird density of 43.4 birds her ha. (21.7 pairs). In winter the scrub belt with its large edge component showed the highest density of birds. This area and the oakwood together are floristically rich with a diverse insect population. The reserve lies on a south facing slope below the crest of a ridge affording shelter in a mainly arable area. It also lies only one field away from a village in which additional garden feeding is available for some species.

P. J. Wilson, E. J. Garlick

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RINGING REPORT 1978

Despite a further increase in activitiy at Gibraltar Point the County total was the lowest for some years. Much of the fall can be accounted for by the drop in wader numbers. The Wash Wader Ringing Group worked hard in Lincolnshire but they were not rewarded with the success which they deserved and usually obtain.

The Sand Martin total was very low and almost all the birds came from one colony. There is no indication that the species suffered a sudden decline but rather that the existing colonies were not exploited.

In the early Autumn the coast proved very disappointing. Easterly winds were scarce and the resulting lack of European migrants is indicated in the low numbers of Redstarts, Pied Flycatchers, Garden Warblers and the rarer warblers.

For those who persevered there were compensations. The outstanding one was a Great Snipe caught on the coast at Saltfleetby. This was not only a county 'first' but a British 'first' too. Almost as rare was the Isabelline Shrike caught at Donna Nook. This was another county 'first' and the third one for Britain.

Other birds of note included two Sparrowhawks, two Rock Pipits, one Crossbill, one Hawfinch, one Rustic Bunting and two Ring Ouzels.

G. P. Shaw

Species	Gibraltar Point Total	Lincolnshire Total
Little Grebe	1	1
Grey Heron	1	13
Wigeon		1
Gadwall		5
Teal	1	16
Mallard		572
Pintail		3
Pochard		10
Tufted Duck		71
Sparrow hawk		2
Kestrel	1	2
Red-legged Partridge	1	1
Grey Partridge	1	4
Pheasant	1	1
Water Rail	2	3
Moorhen		14
Coot		123
Oystercatcher		36
Little Ringed Plover	1	1
Ringed Plover	79	79
Grey Plover	1	6
Lapwing		6
Knot		1
Sanderling	1	1
Little Stint	7	7
Curlew Sandpiper	2	2
Dunlin	67	776
Ruff		2
Jack Snipe	4	4
Common Snipe	21	39
Great Snipe		1
Woodcock	10	10
Redshank	25	145
Greenshank	1	1
Green Sandpiper	3	13
Common Sandpiper	2	2
Turnstone		71
Black-headed Gull	1	394
Common Gull		7
Herring Gull		2
Great Black-backed Gull		2
Little Tern	14	14
Stock Dove	10	12
Woodpigeon	8	15
Turtle Dove	10	24
Cuckoo	9	13
Barn Owl		14
Little Owl		6
Tawny Owl	2	13
Long-eared Owl		1
Short-eared Owl	1	2
Swift		4
Kingfisher	5	14
Wryneck	1	1
Skylark	258	354
Sand Martin	1	188
Swallow	210	472
House Martin		17
Tree Pipit	6	7
Meadow Pipit	36	39
Rock Pipit	2	2
Yellow Wagtail	1	2
Pied Wagtail	1	4
Wren	141	411

Dunnock	550	1,274
Robin	93	357
Black Redstart		2
Redstart	19	33
Whinchat	1	1
Stonechat	1	2
Wheatear	3	4
Ring Ouzel		2
Blackbird	869	1,930
Fieldfare	98	144
Song Thrush	291	713
Redwing	187	404
Mistle Thrush	15	28
Grasshopper Warbler		3
Sedge Warbler	67	127
Reed Warbler	56	187
Icterine Warbler	1	1
Barred Warbler	1	2
Lesser Whitethroat	74	151
Whitethroat	116	327
Garden Warbler	33	63
Blackcap	113	201
Wood Warbler	2	2
Chiffchaff	25	54
Willow Warbler	362	725
Goldcrest	156	387
Firecrest	1	4
Spotted Flycatcher	6	20
Pied Flycatcher	16	23
Bearded Tit		1
Long-tailed Tit	32	220
Marsh Tit		6
Willow Tit	3	58
Coal Tit	6	64
Blue Tit	159	996
Great Tit	39	307
Treecreeper	3	18
Isabelline Shrike		1
Jay		3
Magpie	4	6
Jackdaw		10
Rook		36
Starling	282	1,819
House Sparrow	238	305
Tree Sparrow	271	539
Chaffinch	119	215
Brambling	24	29
Greenfinch	119	434
Goldfinch	155	219
Siskin	2	3
Linnet	123	439
Twite	4	12
Redpoll	161	433
Crossbill	1	1
Bullfinch	38	238
Hawfinch		1
Snow Bunting	7	7
Yellowhammer	42	104
Rustic Bunting	1	1
Reed Bunting	113	229
Corn Bunting	1	1
Totals:-	6,053	18,005
Species:-	92	125

PART TWO

P. Skidmore

(Note Where ratios are given, e.g. 140 : 243=383, the first figure is the number of males, the second females and the third is the total)

Lonchopteridae (Pointed winged flies): Small sombre flies in which there is sexual dimorphism in the wing venation. Larvae are flattened woodlouse like creatures which breed in decaying vegetable matter and humus.

Lonchoptera furcata (Fallen) (v) Males of this common species are exceedingly rare and it is possible that the insect may be partly parthenogenetic. It has been suggested that males may be nocturnal but I have never seen a specimen taken at light. In 1952 I found a few males under debris on the ground in a garden in S. Lancashire. Females common at light, 3-4.7 to 6-7.10. 9 nights, peaks on 23-24.7 (20) and 29-30.9(34). Total 100, females only.

Lonchoptera lutea Panzer (v) The commonest member of the genus; both sexes are abundant. Abundant at light, 3-4.7 to 5-6.10 33 nights, peak on 24-25.9(24:43). Total 140: 243 = 383.

Syrphidae (Hover flies): These are often of large size and spectacular appearance, a combinaton of features which render them particularly popular with collectors. Many are wasp or bee mimics. They breed in a wide range of situations and exhibit an interesting range of adaptive forms in their larval morphology.

Syrphus ribesii(L) (iv) One of our most familiar aphidivorous hover flies, 2♀ 21.8.1965(C.J.D).

S.vitripennis Mg. (v) A very common species closely resembling the preceding, only one in sample, 5-6.10(1:-)

Metasyrphus corollae (f) (iv) 1♂ 22.8.1965(P.S).

M.luniger(Mg) (v) Only one example of this ubiquitous species in sample, 1-2.10 (-:1)

Scaeva pyrastri(L) (v) One of the largest common members of the Syrphinae, this species in common with many of its relatives appears to be partly migratory; two only in sample, 16-17.8(1:-) and 20-21.8(1:-)

Melangyna(Melangyna)umbellatarum(F) (iii) 1♀ 21.8.1965(P.S).

Episyrphus balteatus(Degeer) One of the most abundant hoverflies, this is strongly migratory. (ii) 1♂ 21.8.1965(C.J.D); (v) scarce at light, 10-11.8 to 13-14.9. 5 nights, peak on 10-11.8(4:-). Total 9 males.

Sphaerophoria scripta(L) (iii) Common on a wide range of flowers, 2♂1♀ 22.8.1965 (C.J.D).

Melanostoma mellinum(L) (v) This and the next are two of the most abundant of the medium sized, slender hover flies. Only two in sample, 20-21.8(-:1) and 30-31.8(1:-)

M.scalare(F). (iv) 1♂ 11.5.1966(C.J.D).

Platycheirus(Platycheirus)albimanus(F). (iv) 1♀ 11.5.1966(C.J.D).

P.(P).clypeatus(Mg). Another very common species. (iii) 2♂ 21.8.1965(P.S). (v) Scarce in sample; 20-21.7 to 31.8-1.9. 5 nights, single each night. Total 1: 4=5. The larvae of Platycheirus and the preceding genera above are aphidivorous.

Cheilosia intonsa Loew (iii) 1♀ 22.8.1965(P.S). Cheilosia larvae develop in stems and roots of various plants.

Rhingia campestris Mg. (iv) 1♀ 22.8.1965(C.J.D). Breeds in cow dung.

Syritta pipiens(L). (iv) 2♂ 22.8.1965(C.J.D). Breeds in manure heaps.

Helophilus hydridus Loew (i) 1♂1♀ on Sea Aster flowers, 22.8.1965(C.J.D).

H.parallelus (Harris) (i,iii) 5♂2♀ 22.8.1965(P.S). A typical salt marsh species which breeds in muddy saline pools or mud on swamp margins. Adults on flowers of Sea Aster and Ragwort.

Eristalis(Eoseristalis)abusivus Collin (i) 1♀ 22.8.1965(C.J.D).

E.(E).arbustorum(L) (i) 1♀ 22.8.1965(C.J.D).

E.(Eristalis) tenax (L).(i) 1♀ 22.8.1965(C.J.D).

E.(Eristalinus) sepulchralis(L). (i) 1♀ 22.8.1965(P.S).

Myathropa florea(L). (iv) 1♀ 22.8.1965(P.S). Larvae of Helophilus, Eristalis and Myathropa are "rat tailed maggots" which develop in foul water. This species only develops, so far as is known, in rot holes in trees.

Tephritidae (Picture winged flies). These often spectacularly marked flies breed in living plants, many forming galls.

Myoleja caesio (Harris) (iv) 1♀ 21.8.1965(P.S). The host plant of this supposedly uncommon species is not known.

Orellia tussilaginis(F) (i) 2♂ 22.8.1965(P.S). The larvae develop in the flower petioles of various composites.

Trupanea amoena Frauenfeld (v) One in sample, 6-7.9(-:1)

Otitidae: These are also often referred to as Picture winged flies. The known larvae develop in decaying plant matter.

Melieria omissa(Mg). (i) Frequent on salt marsh, 19.7.1975(P.S).

M.picta(Mg). (i) Abundant on salt marsh, 4♂2♀ 21-22.8.1965(P.S.,C.J.D).

Psilidae: These possibly all breed in living plants but the biology of very few is known in detail.

Psila(Chamaepsila) gracilis Mg. (v) One only in sample, 3-4.8(-:1)

P.(C).pallida(Fallen) (v) One only in sample, 3-4.8(-:1)

Helcomyzidae: These are littoral flies which develop in decaying organic matter.

Heterocheila buccata(Fallen) (v) A common coastal fly; only two in sample, 19-20. 7(1:-) and 5-6.10(1:-)

Chamaemyidae:

Leucopis puncticornis Mg. (v) One only in sample, 22-23.9(1:-).

Lauxaniidae:

Minettia(Minettia) rivosa(Mg). (v) Only two in sample, 29-30.7(-:1) and 24-25.8 (-:1). a generally abundant species in eastern parts of England.

Sapromyza(Sapromyza)obsoleta (Fallen) (iii) One beaten from Sea Buckthorn, 19.7.75(P.S).

Calliopum aeneum (Fallen) (v) Scarce at light, 29-30.9(-:1) and 20-21.7(2:-).

C.simillimum Collin (v) Two only at light, 20-21.7(2:-) Calliopum species are

metallic greenish black, rather small slow moving flies which favour shaded places. These two are very alike but there is a marked difference in the ovipositor, which may infer some difference of laying mechanism. It also appears that whilst aeneum, at least in northern England, is bivoltine, simillimum seems to be single brooded.

Coelopidae (Kelp flies) Whilst these flies, as the common name suggests, are found normally amongst rotting seaweed, certain species have occasionally been reported far inland.

Malacomyia sciomyzina(Hal.) (v) A single example in the sample, 30-31.8(-:1). This appears to be rather a little known species, recorded from very few areas.

Helemyzidae: Biologically this family is divisible into the fungicolous Suilliinae and the saprophagous Leriinae. Some of the latter are restricted in their pabulum to the dung of particular small mammals.

Suillia ustulata(Mg). (iv) 1♀ 22.8.1965(P.S). A large dark, conspicuous species.

S.variegata(Loew) (iii) 1♂ 21.8.1965(P.S).

Tephrochlamys rufiventris(Mg). One of the commonest Heleomyzids. often found in houses during the colder months. (iv) 1♀ v.canescens(Mg). 22.8.65(P.S). (v) Common at light, 15-16.6 to 11-12.9. 26 nights, peaks on 15-16.6(4:1 v.canescens) and 24-25.7(3:1). Total 17:21 = 38. Other specimens agreeing with the v. canescens were taken on 14-15.8(-:1), 23-24.8(-:1) and 29-30.8(1:1).

Tephrochlaena oraria Collin (v) A coastal species of which only one was present in sample, 15-16.6(1:-). This specimen differs from ones which I have taken on the Isle of Rhum in having the third antennal segment darkened in apical half.

Neoleria inscripta(Mg). (v) Scarce at light, 9-10.8 to 17-18.9. 6 nights, singly each night, all females. Total 6. Whilst Tephrochlamys breed in excrement, the present species develops in carrion.

Oecothea fenestralis (Fallen) A common species which breeds in a wide range of decaying animal matter and dung. (v) Common at light, 15-16.6 to 12-13.9. 20 nights, mostly singly each night. total 16: 13=29.

Eccoptomera longiseta(Mg). Eccoptomera species breed in burrows of various small mammals and seldom vacate these situations; consequently they are very rarely taken in the open. They appear however to be attracted to light traps though normally in very small numbers. The present species is thought to breed in mouse runs. (v) 1♂ 15-16.6.68.

Heleomyza serrata(L). (v) Only 3 at light, 15-15.6(1:1) and 3-4.8(-:1). This is generally one of the commonest Heleomyzid flies; it breeds mainly in dung.

H.dupliciseta(Strobl) (v) A single specimen of this very little known species in sample, 15-16.6(1:-).

Chyromyidae:

Chyromya flava(L). (iii) One swept from Sea Buckthorn, 19.7.75(P.S). Chyromya species breed in guano.

Sciomyzidae (Snail killing flies) All known members of this family are parasitic on terrestrial and freshwater Gasteropods. Some are host specific.

Pherbellia cinerella(Fallen) (iii) Common on dunes, 2♂ 22.8.1965(P.S). (v) two only in sample, 22-23.8(-:1) and 11-12.9(-:1).

P.dorsata(Zett.) (v) 1♂ 15-16.6.68. This appears to be a very scarce and little known species.

P.grisescens(Mg). (v) 1♂ 15-16.8.68.

P.pallidiventris(Fallen) (iii) 1♀ 21.8.1965(P.S).

Coremacera tristis (Harris) (iii) Frequent on dunes, 2♂ 22.8.1965(P.S). The host of this large elegant species is not known. Mainly found on fixed dunes and chalk downs, suggesting the probable host is one of the Helicine snails.

Euthycera fumigata(Scopoli) (iii) 1♀ 21.8.1965(C.J.D). Another elegant species whose host is unknown. Mainly in limestone areas.

Pherbina coryleti(Scopoli) (i) Abundant in the marsh, 2♂3♀ 22.8.1965(P.S). (v) one only in sample, 20-21.8(1:-).

Tetanocera elata(F). (i) Abundant in marsh, 3♂2♀ 22.8.1965(P.S).

Trypetoptera punctulata(Scopoli) (iii) 1♂ 21.8.1965(P.S).

Sphaeroceridae These are small to minute blackish flies which abound in rotting plant compost, manure and dung.

Sphaerocera(Ischiolepta)denticulata(Mg). (v) 1♂ 21-12.8.68

Copromyza(Olinea)atra(Mg). (v) Two only at light, 12-13.7(1:-) and 1-2.8(-:1). This is generally regarded as being one of the commonest British Sphaerocerids but it may be particularly common in upland areas.

C.(Fungobia)fimetaria(Mg). (v) One only in sample, 12-13.7.1968

C.(F).roserii(Rondani) (v) Two in sample, 3-4.7(1:-) and 12-13.7(1:-)

C.(Borborillus)uncinata(Duda) (v) Two only at light, 2-3.8(1:-) and 11-12.9(1:-)

C.(B).vitripennis(Mg). (v) Scarce at light, 3-4.8 to 10-11.10.1968. 5 nights, single specimens each time. Total 4:1=5.

C.(Copromyza) equina Fallen This species is particularly associated with horse dung. (v) Commonly at light, 15-16.6 to 15-18.10.1968. 11 nights, peak on 5-6.10(12:7). Total 26:10=38

C.(C).similis(Collin) One of the commonest species; commoner on cow dung than the previous species. (v) Commonly at light, 15-16.6 to 15-18.10.1968. 18 nights, peak on 5-6.10(3:10). total 15:33=48. It would be interesting to ascertain whether in fact the apparent difference between the sexes of this and the preceding species in their frequency at light is due to the small sample size or to a real ecological difference. The figures here suggest that it is the male of equina and the female of similis which predominate at light.

C.(C).stercoraria(Mg). Though generally a common species this is less ubiquitous than either of the preceding ones. (v) One only in sample, 2-3.8.1968(1:-).

Leptocera(Leptocera)curvinervis(Stenh). (v) Two only in sample, 8-9.8(1:-) and 13-14.8.1968(1:-).

L.(L).fontinalis(Fallen) (v) Only one in sample, 3-4.7.1968(1:-). The scarcity of this abundant and ubiquitous insect in the light trappings here is quite inexplicable.

L.(Rachispoda)fuscipennis(Hal.) (v) One only in sample, 21-22.7.1968(1:-). Mainly found in salt marshes where it is normally abundant.

L.(Limosina) empirica(Hutton) (v) 1 12-13.7.1968.

L.(L).heteroneura(Hal.) (v) 1 31.8-1.9.1968.

L.(L).ochripes(Mg). (v) One only in sample, 4-5.10.1968(1:-)

L.(L).palmata(Richards) (v) Scarce at light, 29-30.7 to 26-27.8.1968. 3 nights. Total 3:1=4.

L.(Coproica) vagans(Hal). (v) Scarce at light, 3-4.7 to 12-13.8.1968. 3 nights. Total 4 males.

Pallopteridae

Palloptera muliebris(Harris) (iii) 1♀ beaten from elder bush, 19.7.1975(P.S).

Lonchaeidae These are dark bluish black, shining, slow moving flies which mostly breed under loose bark of trees.

Setisquamalonchaea fumosa(Egger) (iv) 1♂ 22.8.1965(P.S).

Piophilidae

Piophila(Liopiophila)nigrimana Mg. (v) One only in sample, 4-5.8.1968(-:1).

Opomyzidae

Geomyza tripunctata Fallen (i) 1♂ 11.5.1968(C.J.D).

Anthomyzidae

Anthomyza gracilis Fallen (v) Frequent at light, 1-2.8 to 10-11.9.1968. 7 nights, peak on 17-18.8(6). Total 2:11=13. This species develops in dead stems of various marsh plants (i.e. Typha etc.)

A.pallida(Zett). (v) Four only in sample, 23-24.7(1) and 18-19.8.1968(3).

Camillidae

Camilla glabrata Collin (iii) One male beaten from an elder bush on dunes, 19.7. 1975(P.S). Members of this family are generally regarded as uncommon flies but this species appears to be fairly common.

Ephydridae Mainly small flies which abound in marshy areas; many are found mainly or exclusively in salt marshes.

Glenanthe ripicola Hal. (i) 1♂ swept from Sea Lavender 19.7.1975(P.S).

Clanoneurum cimiciforme(Hal). (i) 2♂ 22.8.1965(P.S).

Ephydra riparia Fallen A typical salt marsh species, usually abundant in such places. (v) Scarce at light, 28-29.7 to 6-7.9.1968. 4 nights, singly each time. Total 1:3-4.

Scatella silacea Loew (i) 1♂ 22.8.1965(P.S).

S.stagnalis(Fallen) (v) Only three in sample, 23-24.7(1:-), 20-21.8(-:1) and 15-16.8(-:1). A generally ubiquitous species in marshy areas.

Coenia palustris(Fallen) (v) Two only in sample, 19-20.7(1:-) and 28-29.7.1968 (-:1).

Drosophilidae (Fruit flies)

Scaptomyza(Scaptomyza)flava(Fallen) (iii) 1♂ 21.8.1965(P.S). (v) Sparingly at light, 13-14.8 to 5-6.10.1968. 7 nights, peak on 17-18.8(4). total 2:8 = 10.

S.(S).graminum(Fallen) (v) Commonly at light, 16-17.7 to 6-7.10.1968. 29 nights, peak on 15-16.8(350). total 632.

S.(Parascaptomyza)pallida(Zett). (v) Abundant at light, 11-12.7 to 15-18.10.1968. 25 nights, peak on 24-25.9(450). Total 1080.

Drosophila(Drosophila) funebris(F). (v) Two only at light, 18.8(-:1) and 30-31.8 (-:1).

D.(Dorsilopha)busckii Coquillet (v) Scarce at light, 21-22.8(-:1), 6-7.9(-:1) and 24-25.9(-:1).

D.(Lordiphosa)andalusiaca Strobl (v) Commonly at light, 3-4.7 to 15-18.10.1968. 17 nights, peak on 19-20.7(100). Total 256.

D.(Sophophora)subobscura Collin (v) Frequent at light, 23-24.7 to 15-18.10.1968. 13 nights, peak on 24-25.9(9). Total 6:22=28.

Canacidae The two members of this family are littoral insects.

Xanthocanace ranula (Loew) (v) Two distinct emergences were apparent from the trapping returns; 3-4.7 to 12-13.7 and 10-11.9. 5 nights, peaks on 3-4.7(7) and 10-11.9.1968(7). Total 18.

Agromyzidae

Liriomyza flaveola(Fallen) (v) Four only at light, 3-4.7(-:1), 10-11.9(-:2) and 13-14.9.1968. A very common species, the larva of which mines in a wide range of plants.

Phytomyza ranunculi(Schr). (v) Frequent at light, 10-11.7 to 11-15.10.1968. 9 nights, peaks on 29-30.9(4) and 5-6.10(4). Total 5:15=20. Larvae mine leaves of Ranunculus

Cerodontha denticornis(Pz). (v) Two only at light, 24-25.9(1) and 4-5.10(1).

Chloropidae

Aphanotrigonum fasciella(Zett). (iii) 1♂ 19.7.1975 (P.S).

Oscinella trochanterata Collin (iii) 1♂ 19.7.1975(P.S).

Elachiptera cornuta(Fallen) (v) One only in sample, 4-5.10.1968(1). A generally common and abundant species.

Chloropisca glabra(Mg). (iii) 1♂ 21.8.1965(P.S). (v) One only in sample, 3-4.7. 1968.

Tachinidae (Parasite flies) The larvae of members of this family are parasitic on other insects; a few parasitize other invertebrates.

Thelaira nigripes(F). (iii) Common on flowers (i.e. Ragwort, Hogweed etc.) 2♂2♀ 21.8.1965(P.S).

Lypha dubia(Fallen) (iv) 1♂ 11.5.1966(C.J.D).

Lydina aenea(Mg). (iii) 2♀ 21.8.1965 (P.S).

Eurithia consobrina(Mg). 1♂ 22.8.1965(C.J.D).

Gonia divisa Mg. (iii) 1♀ 11.5.1966(C.J.D).

Ocytata pallipes(Fallen) (iv) 2♀ 22.8.1965(P.S).

Pales pavida(Mg). (iv) 1♂ 22.8.1965(P.S).

Lydella stabulans(Mg). (iv) 1♂ 21.8.1965(C.J.D).

Rhinophoridae

Melanomya nana(Mg). (iii) Commonly by sweeping rank vegetation, 3♂ 22.8.1965(P.S).

Sarcophagidae(Flesh flies)

Sarcophaga filia Rondani (iii) 1♂ 21.8.1965(P.S).

S.frenata Pandelle (iii) Common on flowers, 5♂1♀ 21-22.8.1965(P.S).

S.incisilobata Pandelle (ii,iv) Common on flowers etc. 2♂1♀ 21-22.8.1965(P.S).

S.subvicina Rohd. (iv) 1♂ 22.8.1965(P.S).

Calliphoridae (Blowflies, Greenbottles etc.)

Bellardia cognata(Mg). (iv) 1♂ 22.8.1965(P.S).

B.pusilla(Mg). (iii,iv) Common on flowers etc., 1♂1♀ 21-22.6.1965(C.J.D).

Cynomya mortuorum(L). (Dead Dog Fly) (i,iii,iv) Generally frequent, 6♂ 21-22.8.1965(P.S.,C.J.D). Breeds in carrion.

Lucilia caesar(L). (i,iii,iv) Generally common, 21-22.8.1965(P.S.,C.J.D).

L.illustris(Mg). 1♀ probably this species, 23.8.1965(P.S).

L.sericata(Mg). (Sheep Maggot fly) (ii) Many adults emerged in mid September from maggots collected from a putrifying seal carcase on the point, collected 21.8.1965(P.S).

Scathophagidae

Chaetosa punctipes(Mg). (v) Only one at light, 22-23.7.1968(-:1). A marshland species.

Cordilura(Cordilurina) albipes Fallen (iv) 1♂ 22.8.1965(P.S).

Scathophaga furcata(Say) (v) One male only in sample, 28-29.7.1968. This species though widespread throughout the British Isles is particularly common in more elevated regions.

S.litorea Fallen (v) Commonly at light, 3-4.7 to 10-11.10.1968. 28 nights, peaks on 8-9.7(6), 11-12.9(5) 24-25.9(5) and 1-2.10(7). Total 19: 38=57. This is a characteristic fly of salt marshes and coasts where it breeds in decaying vegetable matter. Like most members of the family the adults are highly predaceous, feeding on other insects.

S.stercoraria(L). (Yellow Dung fly) (i) 1♂ 21.8.1965(P.S). (v) Abundant at light, 3-4.7 to 15-18.10.1968. 55 nights, peak on 22-23.7(132). Total 220: 304=524. A very common species which abounds in most places, it breeds mainly in cow dung.

S.suilla(F). (i) 1♀ 21.8.1965(P.S).

Anthomyidae

Fucellia tergina(Zett). (ii) Abundant on foreshore, 3♂ 21.8.1965(P.S). (v) Scarce at light, 28-29.8 to 3-4.10.1968. Four nights, singly each night. Total 2:2=4. One of the most characteristic flies of the littoral zone, breeding in rotting seaweed etc.

Pegohylemyia fugax(Mg). (iv) Abundant by sweeping rank herbage, 3♂1♀ 22.8.1965 (P.S). (v) Only one at light, 20-21.7(1:-)

P.jacobaeae(Hardy) 1♂ 11.5.1966(C.J.D).

P.seneciella(Meade) (v) Two only at light, 15-16.6.1968(2:-)

Paraprosalpia billbergi(Zett).

Hydrophoria conica(Wd). (iv) 1♀ 22.8.1965(P.S).

H.divisa(Mg). (i) Abundant in marsh, 3♂1♀ 21.8.1965(P.S).

Delia coarctata(Fallen) (i,iii,iv) Abundant on herbage, 21-22.8.1965(P.S.,C.J.D). (v) Scarce at light, 26-27.7(-:1) and 27-28.7(1:1). Total 1:2=3. (Wheat Bulb fly).

D.florilega(Zett). (iv) Abundant by sweeping herbage, 1♂2♀ 22.8.1965(P.S). (v) Frequent at light, 3-4.7 to 7-8.9.1968. 10 nights, peaks on 28-29.7(2:1) and 1-2.8(1:2). Total 10:6=16.

D.platura(Mg). (iv) 1♂ 22.8.1965(P.S). (v) One male only at light, 5-6.8.1968

Hylemya latifrons Schn. & Dziedz. (v) Three males at light, 28-29.7.1968

H.variata(Fallen) (v) One female only at light, 15-18.10.1968. A generally common and abundant species.

Paregle radicum(L). (v) Three only at light, 4-5.8(-.2) and 13-14.8(-:1). A very common species which breeds in a very wide range of organic materials (dung, compost etc.)

Nupedia aestiva(Mg). (v) One only in sample, 24-25.7.1968(-:1).

Pegomyza praepotens(Wd). (iv) 1♂ 21.8.1965(P.S).

Pegomya(Pegomya)albimargo(Pandelle) (iv) 1♀ 22.8.1965(P.S).

P.(P).bicolor(Hoffm). 1♂ 11.5.1966(C.J.D). Larva mines leaves of docks, esp. Rumex obtusifolius.

Mycophaga testacea(Gimm). (iv) 1♂ 22.8.1965(P.S)., on tree trunk. Breeds in fungi.

Fanniidae

Fannia armata(Mg). (iii) 1♂ 19.7.1975(P.S).

Fannia canicularis(L). (Lesser Housefly) 1♂1♀ in Field Station, 21.8.1965(P.S). (v) Only one in sample, 5-6.7.1968(1:-).

F.vesparia(Meade) (iv) 1♀ 22.8.1965(P.S.teste A.C.Pont). Breeds in nests of social wasps.

Muscidae

Polietes lardaria(F) (iv) 1♀ 22.8.1965(P.S). Breeds in cow dung.

Morellia hortorum(Fallen) (iv) common generally, 1♂2♀ 22.8.1965(P.S). This and the next species are very common sweat flies; they develop in cow dung.

M.simplex(Loew) (iv) 1♀ 22.8.1965(P.S).

Azelia cilipes(Hal). (v) Frequent at light, 15-16.6 to 15-16.10.1968. 10 nights, mostly singly each night. total 7:8=15. A very common species which develops in cow dung. The females of Azelia cannot be determined with certainty.

A.macquarti(Staeger) (v) Scarce at light, 17-18.7(1:-), 24-25.7(5:1) and 5-6.8. 1968(1:-). (iii) 1 21.8.1965(P.S). Status and habits similar to last species.

Pendrophaonia querceti(Bouche) (iv) 1♀ 22.8.1965(P.S). Breeds in a wide range of media (i.e. dung, carrion, compost etc.)

Hydrotaea albipuncta(Zett). (iv) 1♂ 22.8.1965(P.S). (v) Only one male at light, 28-29.8.1968. Breeds in cow pats.

H.dentipes(F) (iv) Abundant on foliage, 1♂1♀ 22.8.1965(P.S). (v) Only one female in sample, 13-14.9.1968. An ubiquitous species breeding mainly in decaying plant and animal matter.

Muscina assimilis(Fallen) (iv) common amongst trees, on trunks and foliage which

is covered in honeydew, 4♂ 22.8.1965(P.S). Euryptopic but especially breeds in rotting fungi.

M.pabulorum(Fallen) (iv) 1♂ 22.8.1965(P.S). Eurytopic, but especially in carrion where the larvae prey on those of blowflies etc.

M.stabulans(Fallen) 3♂1♀ in Field Station, 21-22.8.1965(P.S). Eusynanthropic species breeding in wide range of media but especially in association with larvae of houseflies (Musca domestica L.) and Stable fly (Stomoxys calcitrans L.) The larvae of M.stabulans have been recorded many times as major predators on the larvae of these Muscids.

Phaonia basalis(Zett). (iv) Commonly on flowers, 2♀ 22.8.1965(P.S). Breeds in humus soil.

P.errans(Mg). (iv) Common on tree trunks etc., 2♂ 22.8.1965(P.S). Breeds in humus soil.

P.fusca(Meade) (1) On Phragmites, in quantity, 3♀ 21.8.1965(P.S.,C.J.D). This is one of the more important rarities found at Gibraltar Point, being restricted to a few scattered coastal localities in England (Fonseca 1968) and only known abroad from a single locality on the Netherlands coast (Hennig,1967). The biology is unknown but it is only known from stands of Phragmites and it is probable that the larvae prey upon some insect which develops inside this plant.

P.goberti(Mik) (iv) 1♂ 22.8.1965(P.S). This breeds behind the loose bark of dead trees where it preys upon other insect larvae. The adult frequents tree trunks but is very short lived and hence not very commonly seen.

P.palpata(Stein) (iv) 1♂ 22.8.1965(P.S). Breeds under loose bark of dead trees.

P.rufipalpis(Macq). (iv) Commonly on foliage etc. 3♀ 22.8.1965 (P.S).

P.trimaculata(Bouche) (iv) 1♂ on fencepost on field edge, 22.8.1965(P.S). Breeds in various herbaceous plants, preying on phytophagous insect larvae. A well known predator of the Cabbage Root fly (Delia brassicae Bouche).

P.variegata(Mg). (iii,iv) Frequent on tree trunks etc., 3♀ 21-22.8.1965(P.S). Biology similar to P.goberti.

P.viarum R.-D. (iv) 3♀ 22.8.1965(P.S). Breeds in humus soil.

Helina atripes(Meade) (iii, iv) Common generally 1♂4♀ 21-22.8.1965(P.S). (v) a few at light, 20-21.7 to 29-30.8.1968. 6 nights, 3 on 20-21.7, rest singly. Total 8, all females.

H.depuncta(Fallen) (iii),iv) common and abundant, 2♀ 21-22.8.1965(P.S.,C.J.D). Breeds in humus soil. (v) One female at light, 21-22.8.1968.

H.duplicata(Mg). (v) Frequent at light, 4-5.7 to 29-30.8.1968. 7 nights, peak on 24-25.7(-:3). Total 3:7=10. One of our commonest and most abundant Muscids. Breeds in humus soil.

H.impuncta(Fallen) (iii,iv) Common and abundant, 7♀ 20-21.8.1965(P.S.,C.J.D). (v) Only one female at light, 20-21.7.1968. Breeds in humus soil.

H.laetifica(R.-D.) (iv) Common generally, 2♂ 22.8.1965(P.S). (v) Scarce at light, 21-22.7 to 3-4.10.1968. 5 nights, all singly. total 2:3=5. Breeds in humus soil.

H.obscurata(Mg). (iii) Common and abundant amongst rank grassland, 1♂3♀, 21-22.8.1965(P.S). (v) One female at light, 20-21.7.1968. Breeds in humus soil.

H.setiventris Ringdahl (iii) Abundant on 21.8.1965(P.S). Breeds in humus soil

H.quadrum(F). (iii) 1 21.8.1965(P.S).

Hebecnema affinis Malloch (iii) Abundant on elder foliage etc. 1♂ 21.8.1965(P.S).

H.fumosa(Mg). (v) 1♂, 23-24.8.1968. A very interesting record of this uncommon mainly south western species; this is the most northerly known record in Britain (see Fonseca, 1968).

H.umbratica(Mg). (iii) Generally commonly sweeping, 21-22.8.1965(P.S). (v) Sparingly at light, 10-11.7 to 24-25.9.1968. 7 nights, singly each night. Total 1:6-7. The larva is an important member of the cowdung community.

Mydaea scutellaris R.-D. (iv) 1♂ 22.8.1965(P.S). Breeds in cowdung.

M.urbana(Mg). (iv) Common on foliage etc., 1♂2♀ 22.8.1965 (P.S). The larva is an important member of the cowdung community but develops also in other media.

Myospila meditabunda(F). (i) 1♂ 20.8.1965(P.S). Biology as in previous species.

Graphomya maculata(Scop). (i) On Aster flowers with Eristalis and Helophilus, 2♂ 21.8.1965(P.S). Larvae develop in organic mud and foul water, preying on those of Eristaliae (i.e. rat-tailed maggots).

Spilogona aerea(Fallen) (i) Common on the salt marsh, the normal habitat for the species, 21.8.1965, 19.7.1975(P.S).

S.biseriata(Stein) (i) with previous species; breeds under algal mats on wet mud.

Lispe caesia Mg. (i,ii) Commonly on foreshore and on saltmarsh, 10♂6♀ 21.8.1965 (P.S). Lispe species develop in organic mud and under algal mats and are especially numerous in saline marshes.

L.litorea Fallen (ii) On foreshore with L.caesia 1♂ 21.8.1965(P.S).

L.loewi Ringdahl (i) Commonly on saltmarsh with S.aerea and biseriata, 2♂ 19.7.1975(P.S).

L.tentaculata(Degeer) (i) frequent with previous species, 2♂1♀ 19.7.1975(P.S).

Lispocephala alma(Mg). (iii) 1♀ 21.8.1965(P.S).

Dexiopsis lacustris Karl (i) Frequent on salt marsh, 21.8.1965, 19.7.1975(P.S). Gibraltar Point is one of the relatively few known British localities for this species (Fonseca,1967).

Coenosia antennata(Zett). (i) Commonly on salt marsh, 21.8.1965(P.S.)

C.mollicula(Fallen) (i) Commonly on salt marsh, 21.8.1965(C.J.D). (v) three females at light, 17-18.7, 21-22.7 and 28-29.9.1968. A eurytopic species.

C.tigrina(F) (i,iii) Abundant amongst rank herbage, 3♂1♀ 20-22.8.1965(P.S). A very common species of grassland where larvae develop in humus soil etc., preying upon other fly larvae.

C.tricolor(Zett). (iii) Commonly by sweeping, 21.8.1965 (P.S).

Hippoboscidae These in the adult state are bloodfeeders on birds and mammals

Ornithomya fringillina Curtis (ii) One taken from a Hedge Sparrow caught by a visiting ornithologist, 22.8.1965.

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